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Promoting innovation in the Netherlands to replace PFAS applications

RIVM letter report 2026-0100
S.M. Hard | S.I.I. Sohlberg | J.M.M. Rutten

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Colophon

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Synopsis

Promoting innovation in the Netherlands to replace PFAS applications

PFAS are man-made chemical substances. They barely degrade, causing them to accumulate in the environment. They are also harmful to health. In the Netherlands, almost everyone is exposed to too much PFAS, for example through food and drinking water. As this is a big, complicated issue, there is no single solution for reducing exposure.

An important step to reduce exposure is the European proposal for a ban on the production, use and sale of PFAS. For certain applications, manufacturers will be given more time to develop alternatives, up to a maximum of 13.5 years. These alternatives could include the use of other chemicals or technologies that no longer require PFAS.

It is important to develop good and safe alternatives to PFAS. That way, less PFAS will end up in the environment and people's exposure will be lower. Developing such alternatives is both complicated and expensive. The National Institute for Public Health and the Environment (RIVM) has therefore created an overview of uses of PFAS by Dutch industry for which no alternatives are yet available. Policymakers can use the overview to determine in which sectors subsidies could help to speed up the development of alternatives to PFAS.

RIVM emphasises that such development activities should already take safety and sustainability into account at the design stage. This is known as Safe and Sustainable by Design (SSbD). This helps to prevent alternatives that cause as much or even more harm than the PFAS they are replacing.

The study is part of a large research programme commissioned by the Ministries of Health, Welfare and Sport (VWS), Infrastructure and Water Management (IenW) and Agriculture, Fisheries, Food Security and Nature (LVVN). In the context of this programme, RIVM is investigating ways to reduce human exposure to PFAS.

Keywords: PFAS (per- and polyfluoroalkyl substances), Alternatives, Subsidies, Innovation, Policy measures, Societal benefit, SSbD (Safe and Sustainable by Design), REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals)

Publiekssamenvatting

Bevorderen van innovatie in Nederland om PFAS te vervangen

PFAS zijn chemische stoffen die door de mens zijn gemaakt. Ze breken bijna niet af, waardoor ze in het milieu ophopen. Ze zijn ook schadelijk voor de gezondheid. In Nederland krijgt bijna iedereen te veel PFAS binnen, onder andere via voedsel en water. Dit probleem is groot en ingewikkeld, waardoor er niet één oplossing is om de blootstelling te verminderen.

Een belangrijke stap om de blootstelling te verminderen is het Europese voorstel voor een verbod om PFAS te maken, gebruiken en te verkopen. Fabrikanten krijgen voor sommige toepassingen de tijd om alternatieven te ontwikkelen, tot maximaal 13,5 jaar. Dit kunnen andere chemische stoffen zijn, of technologieën waardoor er geen PFAS meer hoeft te worden gebruikt.

Het is belangrijk om goede en veilige alternatieven voor PFAS te ontwikkelen. Zo komt er minder PFAS in het milieu terecht en komen mensen minder met PFAS in aanraking. Maar het is ingewikkeld en duur om zulke alternatieven te ontwikkelen. Het RIVM maakte daarom een overzicht van het gebruik van PFAS in de Nederlandse industrie waarvoor nog geen alternatieven zijn ontwikkeld. Dit overzicht helpt beleidsmakers om te bepalen voor welke sectoren een subsidie kan helpen om sneller alternatieven voor PFAS te ontwikkelen.

Het RIVM benadrukt om al bij het ontwerp van alternatieven aandacht te hebben voor veiligheid en duurzaamheid. Dit heet Safe and Sustainable by Design (SSbD). Dat voorkomt dat het alternatief schadelijk of zelfs schadelijker is dan de PFAS die het zal vervangen.

Dit onderzoek is onderdeel van een groot onderzoeksprogramma in opdracht van de ministeries van Volksgezondheid, Welzijn en Sport (VWS), Infrastructuur en Waterstaat (IenW) en Landbouw, Visserij, Voedselzekerheid en Natuur (LVVN). Het RIVM onderzoekt hiervoor wat de mogelijkheden zijn om de blootstelling van mensen aan PFAS te verminderen.

Kernwoorden: PFAS (Per- en polyfluoralkylstoffen), Alternatieven, Subsidies, Innovatie, Beleidsmaatregel, Maatschappelijke waarde, SSbD (Safe and Sustainable by Design), REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals)

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Management summary

Per- and polyfluoroalkyl substances (PFAS) are man-made chemicals that can harm human health through exposure via (amongst others) food, drinking water and the environment. Within the PFAS research programme (2023–2026), RIVM gathered 161 stakeholder suggestions on how to further reduce PFAS exposure in the Netherlands (Rutten et al., 2026). A key finding is that targeted national subsidies for research and development might help accelerate the development of alternatives to PFAS and thereby limit future emissions of PFAS into the environment. By helping companies with overcoming financial barriers, they increase the likelihood that alternatives are identified in time. As a result, they minimise the likelihood that time-limited derogations included in the proposed REACH[1] restriction on PFAS in general (that covers the European Economic Area[2]) are later extended by the European Commission. The restriction proposed by the Netherlands, Germany, Denmark, Norway and Sweden includes use-specific, mostly time-limited derogations. These derogations are proposed for uses for which no alternatives are expected to be available on the market by entry into force of the restriction. Depending on the stage of development of alternatives, derogations of a duration of 6.5 or 13.5 years are proposed. Societal costs expected to be triggered by situations in which a derogation expires without alternatives having been developed, despite all efforts, might lead the European Commission to extend those derogations.

To help with determining whether a targeted national subsidy scheme can be of societal benefit in the Netherlands, this report aims to provide an overview of PFAS applications for which suitable alternatives have not been identified yet and production of products (mixtures or articles) takes place in the Netherlands. As such, the focus lies largely on identifying applications that fall within the scope of time-limited derogations of the longest proposed timeframe, i.e. 13.5 years. The list of derogations proposed as of June 2025 by the five countries that submitted the proposal is taken as a basis for this. The resulting overview helps policymakers determine which sectors could benefit from a targeted national subsidy scheme for the development of alternatives to PFAS. The decision on whether to implement a subsidy scheme for specific sectors ultimately requires a comparison of the societal costs and benefits: Subsidies should only be granted to sectors for which the expected societal benefits exceed the costs.

This overview was created by combining two strands of evidence. Firstly, Dutch comments submitted during the consultation on the proposed REACH restriction (on PFAS in general) for the European Economic Area were matched with the derogations that fall within the scope of this research. Secondly, to complement the overview, relevant Dutch sector

[1] REACH stands for 'Registration, Evaluation, Authorisation and Restriction of Chemicals'. A REACH restriction is a restriction implemented in accordance with the provisions set out in Regulation (EC) No 1907/2006 of the European Parliament and of the European Council.
[2] The European Economic Area covers the Member States of the European Union, Iceland, Liechtenstein and Norway.

associations were identified based on the list of members of the VNO-NCW and also linked to derogations. In total, VNO-NCW members are reported to account for 90 percent of employment in the private sector in the Netherlands. This renders the list a suitable basis for creating a comprehensive overview, together with information from the consultation.

Based on the consultation comments, applications for which production takes place in the Netherlands were identified in relation to 20 distinct derogations. These derogations relate to 10 use sectors defined by the five countries (the Netherlands, Germany, Sweden, Norway and Denmark) that developed the REACH restriction proposal. The complementary research based on the VNO-NCW members list identified 15 additional derogations in relation to which production activities might (and in eight cases, are likely) to take place in the Netherlands. In total, industrial activities in the Netherlands are thus expected to take place in relation to at least 28 relevant derogations, and potentially seven more. Those derogations relate to:

- Textile, upholstery, leather, apparel and carpets (referred to as "TULAC" in the REACH restriction proposal);
- Applications of fluorinated gases;
- Medical devices;
- Transport;
- Electronics and semiconductors;
- Energy applications;
- Construction products;
- Printing applications;
- Sealing applications;
- Machinery applications;
- So-called other medical applications;
- Military applications;
- Explosives; and
- Technical textiles.

Additional production activities falling within the scope of relevant derogations cannot be ruled out, e.g. as the VNO-NCW members do not cover all activities in the private sector and as confidential submissions to the consultation were not taken into account.

The analysis indicates that a targeted national subsidy scheme for research and development activities could deliver environmental and health benefits as well as economic benefits. It might help advance substitution in various applications for which production is prevalent in the Netherlands, increase the likelihood that robust alternatives to PFAS become available within predictable timeframes, and thereby might reduce business risks (such as disruptions to their operations) and uncertainties for both producers and downstream users. In doing so, a subsidy scheme could help safeguard existing jobs, support the creation of new high-skilled positions and strengthen the long-term competitiveness and resilience of the Dutch economy. A strong economy would ultimately also positively contribute to the welfare of the Dutch population by contributing to sufficient revenues for financing public services such as healthcare and pensions and for financing important

investments to meet societal challenges such as climate change and increasing geopolitical tensions.

To ensure that public financial support is only provided where needed to solve a societal challenge, it is furthermore advisable to carefully consider the stage of the research and development process that the applicant is at, the level of uncertainty faced and the resulting impact on access to financial means when deciding on subsidies.

The analysis also underlines that stimulating innovation through financial support alone is not sufficient: to avoid regrettable substitution, a subsidy scheme should explicitly apply Safe and Sustainable by Design (SSbD) principles. Making SSbD approaches a mandatory requirement in subsidy schemes – including life-cycle thinking, value-chain stakeholder involvement and appropriate support and steering mechanisms – can help ensure that new solutions are not only effective, but also safer and more sustainable over their entire life cycle.

When designing a subsidy scheme, careful consideration needs to be given to possible differences between the list of derogations proposed by the five countries that prepared the REACH restriction proposal and the final list of derogations to be legally implemented by the European Commission in the future.

1 Introduction

1.1 Solving the pollution problem and lowering exposure of the Dutch population to PFAS

Per- and polyfluoroalkyl substances (PFAS) are man-made chemicals. Research by the National Institute for Public Health and the Environment (RIVM) shows that people in the Netherlands ingest too much PFAS through food and drinking water (Schepens et al., 2023), which can lead to adverse health effects.

The PFAS research programme (2023 – 2026), carried out by RIVM for the ministries of Infrastructure and Water Management (IenW), of Health, Welfare and Sport (VWS) and of Agriculture, Fisheries, Food Security and Nature (LVVN), aims to reduce people's exposure to PFAS (Bulder et al., 2024). The central question is how exposure of the Dutch population to PFAS via food, drinking water and the living environment can be reduced, in addition to existing measures.

The RIVM gathered input during three PFAS stakeholder meetings (2023, 2024, 2025) with citizens, national, regional and local government representatives, Municipal Health Services (GGDs), drinking water companies, water authorities, advocacy organisations, businesses, universities and research institutes. They were asked which additional options they see to further reduce exposure to PFAS.

In total, 161 suggestions were collected. The inventory shows that participants in the stakeholder meetings have a broad, and partly shared, view of the PFAS pollution problem (Rutten et al., 2026). Many suggested measures closely match, or form part of, existing PFAS policies. Participants particularly stress the need to "turn off the tap": stopping PFAS production and PFAS emissions to the environment. This aligns with the PFAS restriction proposal for the European Economic Area (EEA) which was submitted to the European Chemicals Agency (ECHA) by the Netherlands, Germany, Denmark, Norway and Sweden in 2023.

The proposed REACH[3] restriction, which covers PFAS in general (rather than specific or sub-groups of substances), is expected to have a major impact on the emissions of PFAS and thereby helps to limit future exposure of humans, wildlife and domesticated animals. Overall, the PFAS restriction with (mostly time-limited) use-specific derogations as proposed by these five countries is expected to reduce emissions by 83%. A complete ban with a transition period of 18 months would reduce them by about 96%[4]. Without measures, the average volume of

[3] REACH stands for 'Registration, Evaluation, Authorisation and Restriction of Chemicals'. A REACH restriction is a restriction implemented in accordance with the provisions set out in Regulation (EC) No 1907/2006 of the European Parliament and of the European Council.

[4] The generic transition period gives companies time to take required actions to ensure full compliance with the ban on manufacturing, using and placing on the market of PFAS as a substance on its own, in another substance (as a constituent), in a mixture or an article. It, for example, allows companies that do not use the alternative substance or technology yet to consider substituting PFAS. In addition, this period is – as noted in

PFAS used in the European Economic Area (EEA), which captures the European Union Member States and Iceland, Liechtenstein and Norway, over 30 years (2025–2055) is estimated at 27 million tonnes, leading to about 4.7 million tonnes of emissions during production, use and waste phases (ECHA, 2025a).[5]

The REACH restriction proposed by the five countries includes several use-specific derogations. To avoid disincentives for timely research and development, these derogations are generally time-limited, in some cases up to 13.5 years, and might be extended. The duration of these derogation periods depends on whether alternatives are deemed to exist and their stage of development. In addition to the use of PFAS in products benefitting from a derogation, PFAS may also still be produced and placed on the EU market during these derogation periods, resulting in continued PFAS emissions to the environment.

Within the PFAS research programme, RIVM examines whether there are PFAS applications for which production is prevalent in the Netherlands for which subsidy schemes could help with stimulating innovation in alternatives. Investing now in the development of these alternatives has the potential to limit future PFAS emissions to the environment and thereby (amongst others) human exposure. Stimulating innovation through research funding fits well with the PFAS Action Programme delivered amongst other organisations by the Ministry of Infrastructure and Water Management (IenW), which aims to inform and support industry in preparing for and adapting to the proposed REACH restriction (VNO-NCW, 2024). Targeted subsidies for research and development activities might help with enabling stakeholders to participate in research and substitution efforts, increasing the likelihood that alternatives are identified in time and thereby avoiding the need to extend phase-out periods.

1.2 The transition away from PFAS

When asked about possible options to reduce exposure to PFAS, participants in the PFAS stakeholder meetings made several suggestions relating to stimulating innovation and the use of alternatives. As reported by Rutten et al. (2026), stakeholders indicated that efforts need to be made to develop safer alternatives. While industry is named as an important player in this context, stakeholders highlight that authorities can provide support, e.g. by providing targeted subsidies or tax benefits to stimulate innovation or putting taxes on the use of PFAS to stimulate the transition.

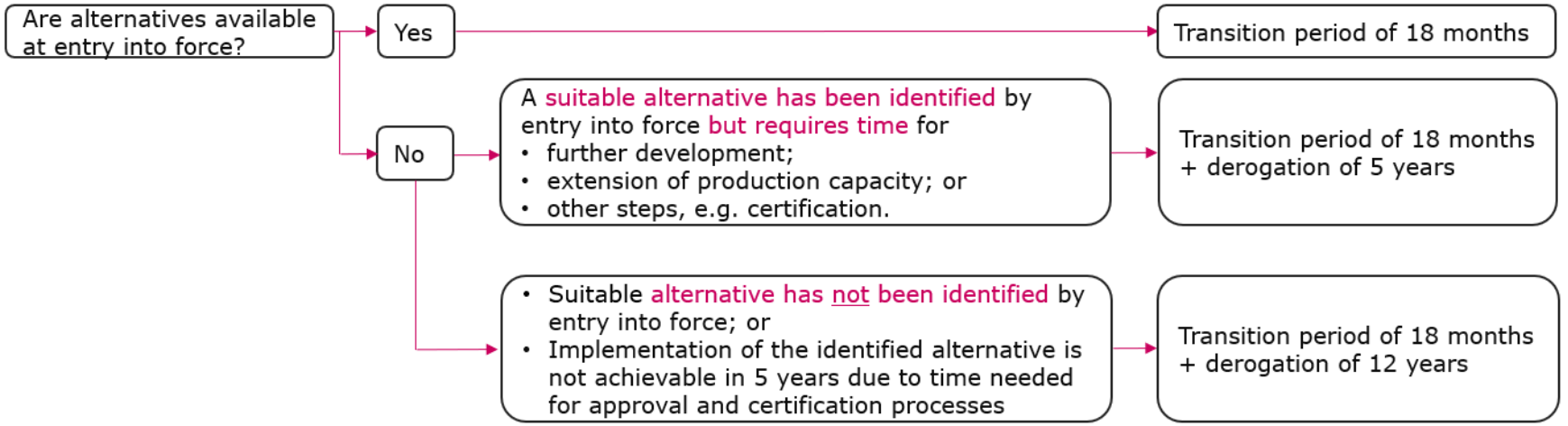
Taking action to support the timely identification of alternatives and timely development and deployment of alternative-based products is important for ensuring that the use of PFAS is phased out as quickly as

ECHA (2025a) – considered reasonable for selling existing stocks of PFAS and of materials which contain PFAS. As a result of this transition period, the estimated reduction is lower than 100%.

[5] The estimated volume of emissions over 30 years as well as the estimated emission reduction in percentage terms are based on a consideration of all uses of PFAS falling within the scope of the restriction. These estimates do not account for PFAS used as active substances in biocidal products within the scope of Regulation (EU) 528/2012, active substances in plant protection products within the scope of Regulation (EC) 1107/2009 and active substances in human and veterinary medicinal products within the scope of Regulation (EC) No 726/2004, Regulation (EU) 2019/6 and Directive 2001/83/EC. Those uses are exempted from the proposed restriction.

possible given that proposed derogations are largely time-limited. As mentioned in Section 1.1, the derogation period, i.e. time for phasing out the use of PFAS, is determined based on the maturity of alternatives for specific applications. As illustrated in Figure 1, the five countries that submitted the REACH restriction proposal do not propose a derogation for applications where alternatives are already available on the market. In such cases, a so-called transition period of 18 months is granted to allow companies to take required actions to ensure full compliance. For applications for which alternatives are not available on the market yet, a complementary derogation of 5 or 12 years is granted. As such, derogations of a total duration of 6.5 or 13.5 years are ultimately proposed. The duration of the complementary derogations is determined by the stage of development of alternatives. A derogation of 6.5 years is proposed when available evidence suggests that alternative-based products cannot be supplied on the market when the restriction enters into force but companies have already identified a suitable alternative. In such cases, time is found to be needed to complete the development process, including certification (where relevant) and/or install sufficient production capacity. A derogation of 13.5 years is proposed when no suitable alternative has been identified so far or when available evidence suggests that implementation of the identified alternative cannot be achieved within the shorter derogation timeframe. The five countries that submitted the REACH restriction proposal consider these timeframes to normally be sufficient for companies to benefit from technical progress and to find and market suitable alternatives (ECHA, 2025a).

Figure 1 Criteria employed in the REACH restriction proposal for proposing derogations (as reported in ECHA, 2025a)



The five countries that submitted the REACH restriction proposal, however, identify some uncertainties as to the time required for completing substitution due to associated complexities.[6] In light of these uncertainties, they suggest to the European Commission to consider the introduction of a mechanism to review derogations prior to their expiration. Time-limited derogations are proposed despite the recognized uncertainties to avoid any incentive for delaying the development of alternatives (ECHA, 2025a).

A review mechanism was also seen as beneficial by many stakeholders reacting to the consultation on the REACH restriction proposal in 2023. According to stakeholders, such a mechanism would – as noted in ECHA (2025a) – support ongoing business decisions and investments in the European Union.

In its draft opinion on the REACH restriction proposal, the Committee for Socio-Economic Analysis (SEAC) indicates support for close monitoring of the state of play of research and development efforts on alternatives. It furthermore highlights that the European Commission has the possibility to review a REACH restriction at any time if warranted by new scientifically relevant information (ECHA, 2026a).

As such, stimulating innovation through public financial support could help with minimizing the likelihood of extensions of time-limited derogations and thereby limit future PFAS emissions. As noted in Section 1.1, this could help with limiting exposure of humans, wildlife and domesticated animals to PFAS. It might also allow for shortening derogation periods if research and development efforts are completed successfully earlier than expected.

Accessing sufficient financial means is, in fact, a problem for companies in the Netherlands according to the Scientific Council for Government Policy (Wetenschappelijke Raad voor het Regeringsbeleid, WRR). In a report published in 2023, the council concludes that current funding sources are insufficient for large-scale adaptions or transitions given the lacking long-term thinking/orientation of the financial sector. This way of thinking is however required for investments with an uncertain expected return (WRR, 2023).

1.3 Aim of the report

To help with determining whether a targeted national subsidy scheme can be of societal benefit in the Netherlands by stimulating research and development, this report aims to provide an overview of PFAS applications for which suitable alternatives have not been identified yet and production of products (mixtures or articles) takes place in the Netherlands. Increased research and development activities increase the likelihood of finding suitable alternatives to the use of PFAS. In this way, subsidies targeted at research and development activities for relevant applications might indirectly help with limiting future emissions and

[6] Identified uncertainties relate in particular to derogations of a duration of 13.5 years. In certain cases, the complexity of substitution processes might also be increased by the presence of PFAS in multiple applications of a company due to the need to conduct such substitution processes in parallel.

therefore exposure of - amongst others - the Dutch population. The central research question is: *Are there applications of PFAS, for which suitable alternatives have not been identified yet, for which the production of products (mixtures or articles) for sale to industrial or professional customers or households is taking place in the Netherlands? If so, which are those?*

To this end, the report aims to provide an overview of applications of PFAS that were identified as relevant to the European Economic Area by the five countries that submitted the proposal for a REACH restriction for which:

1. A derogation of a duration of 13.5 years (or a time-unlimited derogation associated with one of those 13.5-year derogations) has been proposed; and
2. Production is prevalent in the Netherlands.

The aim of this report does not encompass setting up a design for a scheme for the provision of financial support. Also no estimate on the amount of money required is given.

Section 2 provides insights into why the provision of subsidies is considered to be appropriate, possibly beneficial to society and the most suitable approach for providing financial support for the development of alternatives to PFAS. Section 3 provides an overview of the approach employed for identifying relevant applications of PFAS (that meet the criterion mentioned above) for which production is prevalent in the Netherlands. It also explains why the focus lies on applications falling within the scope of derogations of a duration of 13.5 years (or time-unlimited derogations directly associated with those). Section 4 reports the results of the analysis. Based on the results of the analysis, Section 5 draws a conclusion on whether production activities relating to relevant applications of PFAS (that meet the criterion mentioned above) take place in the Netherlands. It also highlights uncertainties associated with the assessment and draws a conclusion on whether a subsidy scheme would be of societal benefit. Section 6 provides suggestions for increasing the likelihood of successful innovation, including suggestions for avoiding the unintended consequences of regrettable substitution. This is followed by an overarching conclusion in Section 7. This overarching conclusion summarises the potential benefits of a subsidy scheme and key recommendations. Section 7 also provides information on required next steps.

2 The relevance of subsidies for innovation

As noted in Section 1.2, accessing sufficient financial means for large-scale adaptions or transitions is a challenge for companies in the Netherlands. The provision of public financial support could thus be beneficial for facilitating the timely development and deployment of alternative-based products.

According to Rutten et al. (2026), subsidies are – in comparison to other measures suggested during PFAS stakeholder meetings – considered to be particularly useful for stimulating innovation and helping companies with overcoming financial barriers. Tax benefits, e.g. for research and development expenditures, are as noted in Rutten et al. (2026) not suitable for overcoming these barriers. They also aim at improving companies' capability to finance research and development activities and have the ability to free up some additional funds. Ultimately, such tax benefits are, however, reliant on companies' ability to source sufficient funding through other means and start research and development activities for such benefits to even have an effect.

The provision of subsidies for developing alternatives to PFAS is in line with the general advice provided by the Scientific Council for Government Policy (Wetenschappelijke Raad voor het Regeringsbeleid, WRR) on how to enable industry contributions, which are considered essential, to solving current societal challenges: All recommendations provided in WRR (2023) aim at ensuring that contributing to the development of such solutions is not only beneficial to society but also profitable for companies. While it is recommended to not overly protect companies and to be cautious with providing financial support in any form (e.g. via subsidies or tax benefits), the council recommends to support industry financially when – and only when – temporary support for developing solutions to societal challenges is needed. Other recommendations, such as the creation of a public-private investment bank, are also aimed at unleashing investments for transitions. Existing public funds such as the National Growth Fund (Nationaal Groeifonds) or Invest-NL are reported to be insufficient as of yet, e.g. due to insufficient financial capacity (WRR, 2023).

Given the societal concerns surrounding PFAS pollution and exposure, this report considers that the development of alternatives to PFAS constitutes a solution to a societal problem for which the provision of public support is advisable according to WRR (2023).

Similarly, the so-called Wennink report (Wennink, 2025) – an independent advisory report commissioned by the Dutch government – concludes that public funds are required to stimulate innovation. This report was commissioned with a view of translating the findings of the Draghi report on the future of the European earning capacity to the Dutch context. Amongst the creation of a National Investment Bank to bundle existing instruments and organize public-private co-founding for infrastructure and technology investments, Wennink (2025)

recommends to create a National Agency for Groundbreaking Innovation to foster innovative ecosystems and provide funds for strategic innovation projects. Wennink (2025) highlights that such innovation is important from an economic perspective and for maintaining the welfare of the Dutch population: The current geopolitical situation, the ageing population and required transitions to limit climate change require increasing investment in defence and the energy transition and lead to increased costs for healthcare and pensions. To fund these, annual growth of at least 1.5% to 2% is required according to Wennink (2025). These required growth rates are reported to be significantly above mid-term annual growth predictions of 0.5% to 0.9% made by the Dutch central bank (De Nederlandsche Bank, DNB) and the Dutch Bureau for Economic Policy Analysis (Centraal Planbureau, CPB). As such, further economic growth is required to ensure that societal challenges can be tackled and public service levels can be maintained. To achieve such growth, Wennink (2025) recommends to focus on innovation in high-end niche technologies of global societal relevance, amongst which energy and climate technology, security and biotechnology, where the Netherlands can develop a competitive advantage and benefit from large growth in demand. Beyond the economic benefits, becoming a leading innovator in these fields is according to Wennink (2025) beneficial for avoiding one-sided dependencies and developing a stronger geopolitical position. PFAS are used for several of these applications.

In conclusion, the provision of financial support for research and development activities on PFAS alternatives can be beneficial for enabling innovation and the transition away from PFAS. It is expected to not only have the potential to result in environmental benefits and health benefits to society by helping to limit exposure but also economic benefits for society. The provision of such support is furthermore in line with recommendations made by Dutch industry. VNO-NCW reports to represent 300 000 businesses in the Netherlands that account for 90 percent of employment in the private sector (VNO-NCW, 2026a). The association recognizes that an extensive effort must be taken to find alternatives to PFAS for applications for which they are currently still needed. While this process is considered to be complex and costly, the association is confident that significant progress can be made if authorities, academia and industry work together and all invest in those processes. A targeted innovation programme with additional budget is considered to be a key pre-requisite for success (VNO-NCW, 2026b).

3 Approach

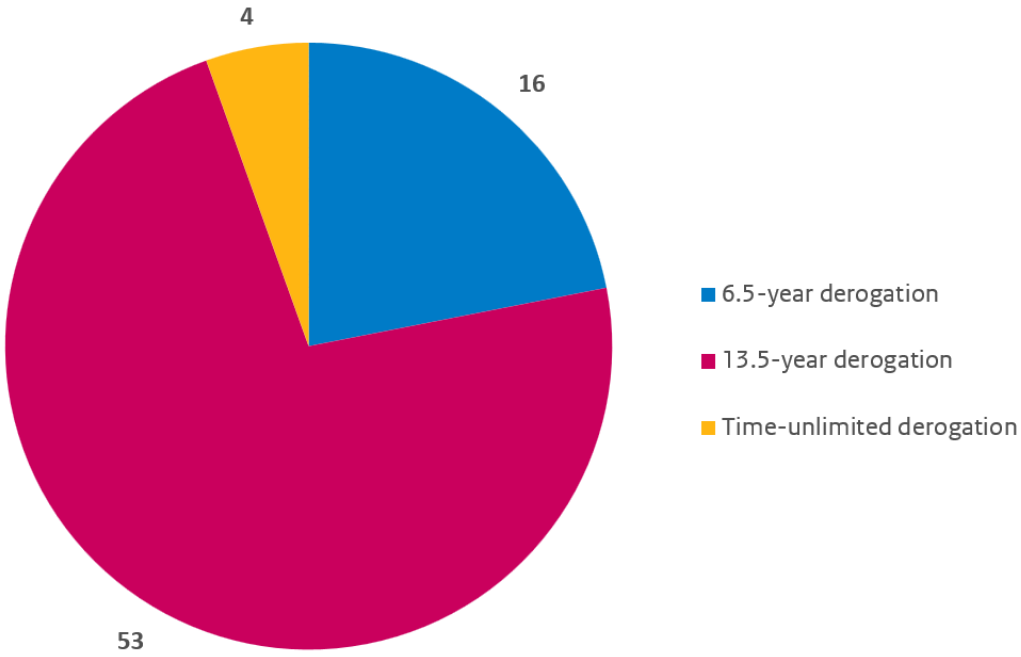
3.1 Focus on applications falling within the scope of 13.5-year derogations (and associated time-unlimited derogations)

As mentioned in Section 1.3, the analysis focusses on applications falling within the scope of derogations of a duration of 13.5 years (or a time-unlimited derogation associated with one of those derogations). This focus is chosen as shorter derogations of a duration of 6.5 years are, as explained in Figure 1, proposed when a suitable alternative has already been identified but further time is required to supply alternative-based products on the market. More time might be needed for e.g. further developing the product, extending production capacities or arranging certification of the product. These activities require time but are associated with limited uncertainty, i.e. it is likely that the company will end up supplying profitable products on the market in the near future. Investments in such activities are therefore less risk-prone which makes them attractive for investors and suitable for bank loans when external complementary funding is needed. As such, financial barriers for developers/producers of alternative-based products are lower. Temporary public financial support is therefore not considered to be needed and also not advisable. As mentioned in Section 2, the Scientific Council for Government Policy (Wetenschappelijke Raad voor het Regeringsbeleid, WRR) recommends that industry should only be supported financially, e.g. via subsidies, when – and only when – temporary support for developing solutions to societal challenges is needed. This is not the case for applications falling within the scope of derogations of a duration of 6.5 years. The same applies to applications without derogations.

3.1.1 Number and duration of derogations proposed in the REACH restriction proposal

Paragraphs 5 and 6 in the proposed REACH restriction list derogations proposed based on the criteria described in Section 1.2. Paragraph 5 includes derogations that cover all types of PFAS, e.g. fluorinated gases and fluoropolymers, relevant to the application. In contrast, derogations in Paragraph 6 are limited to fluoropolymers and perfluoropolyethers (PFPEs). Overall, 74 derogations are listed, of which 73 are proposed and one derogation is a derogation for reconsideration by the European Commission as the submitters of the proposal are not able to conclude on the proportionality of this derogation. As shown in Figure 2, of the 73 proposed derogations, around 73% (53 derogations) have a duration of 13.5 years, while around 22% (16 derogations) have a duration of 6.5 years. In addition, four time-unlimited derogations are proposed (ECHA, 2025a).

Figure 2 Overview of duration of the 73 proposed derogations in Paragraphs 5 and 6 (developed based on ECHA, 2025a)



Three (of four) time-unlimited derogations are closely associated with proposed 13.5 derogations, i.e. the derogations for:

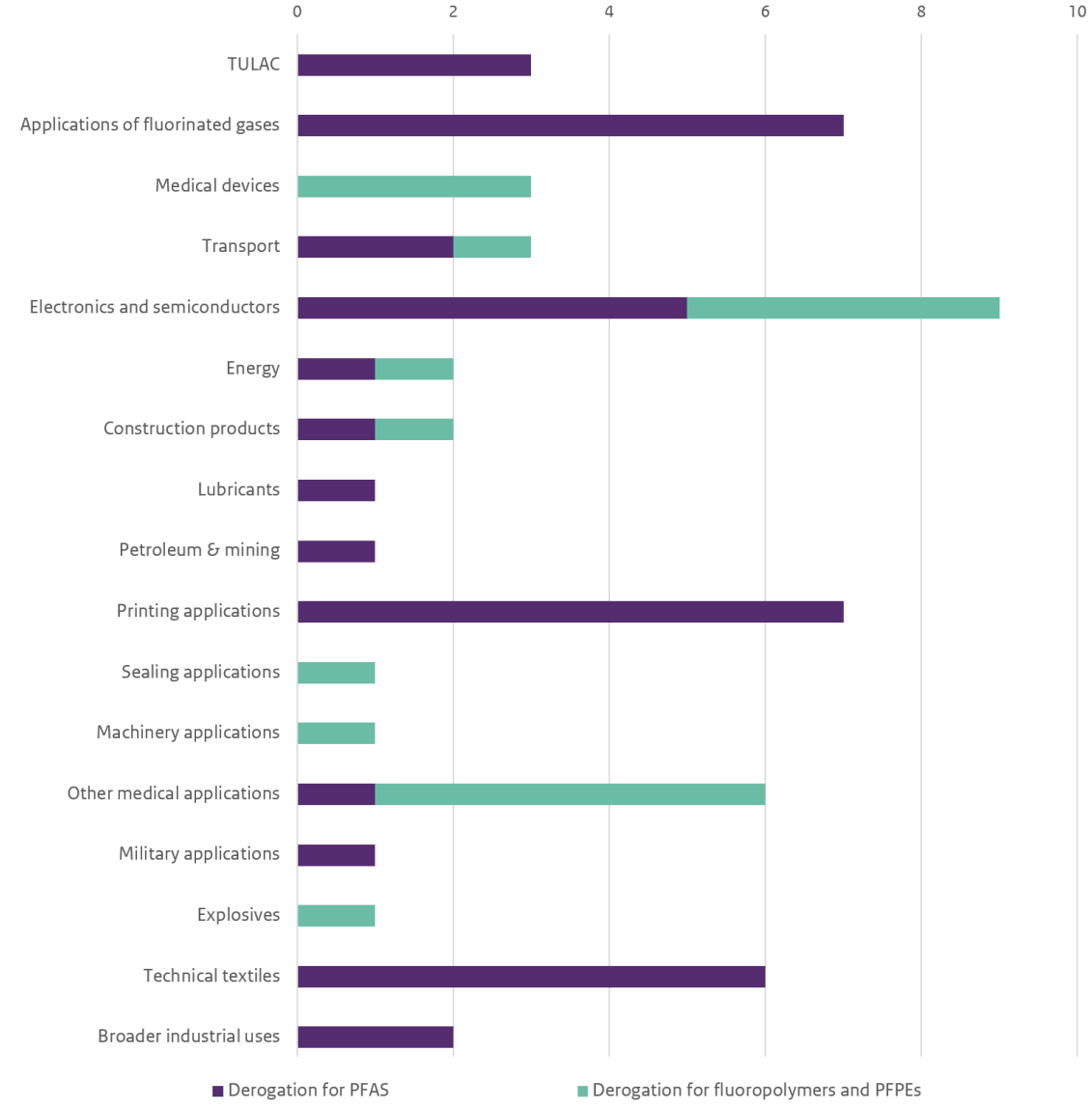
- Refrigerants, clean fire-suppressing agents and insulation gases for maintenance and refilling of existing heating, ventilation, air conditioning, and refrigeration (HVACR), fire-suppressing and switchgear equipment put on the market before 18 months (or placed on the market after 18 months after entry-into-force based on an applicable derogation) (Derogation 5n);
- Toners for use in existing equipment that was put on the market until 13.5 years after entry-into-force (Derogation 5hh); and
- Latex printing inks for use in existing equipment that put on the market until 13.5 years after entry-into-force (Derogation 5ii).

All of those derogations aim at ensuring the continued functioning of installed/purchased equipment until the end of its service life. Alternatives to fluorinated gases can in many cases not be used in installed equipment covered by Derogation 5n as the design of the equipment is targeted to the use of fluorinated gases. Ensuring use of this equipment until the end of its service life is reported as the best option for the environment by the submitters of the REACH restriction proposal. Similarly, printers put on the market until 13.5 after entry-into-force of the restriction are designed in a way that allows them to function with the current generation of toners and inks that contain PFAS. To allow for the use of alternatives, once identified, adjustments to the printer design are needed. Time-limited derogations (of a duration of 13.5 years) are therefore proposed to allow sufficient time for developing and starting to supply alternative-based toners and latex printing inks as well as associated printing equipment that is compatible with those. To prevent the early redundancy of equipment already in

use, the time-unlimited derogations allow for continued supply of PFAS-based toners and latex printing inks. As noted in the REACH restriction proposal, printers put on the market after 13.5 years would be adapted to the alternative-based toners and latex printing inks, thereby rendering the continued use of PFAS-based toners and latex printing inks technically impossible. Demand for PFAS-based toners and inks is therefore expected to gradually decline over time, once alternatives and compatible printers have been developed (ECHA, 2025a). As such, the derogations for continued use in existing equipment (5hh and 5ii) are time-unlimited in principle but they would be rendered redundant over time if alternative-based toners and latex-printing inks are developed in the time provided by the 13.5-year derogations. As such, subsidies supporting research and development activities related to the respective 13.5-year derogations have a direct impact on PFAS use and the uptake of the time-unlimited derogation. The same applies to the aforementioned uses, e.g. in refrigeration equipment, of fluorinated gases. The three time-unlimited derogations are therefore considered as part of the analysis conducted.

Overall, 56 are therefore considered to be of relevance to the assessment. As shown in Figure 3, these 56 derogations are distributed across 17 different use sectors defined by the five countries that developed the REACH restriction proposal.
With nine derogations of a duration of 13.5 years, electronics and semiconductors is the use sector with the highest number of relevant individual derogations proposed, followed by so-called applications of fluorinated gases and printing applications.

Figure 3 Overview (per use sector) of the number of proposed derogations in Paragraphs 5 and 6 that are in scope of the assessment, i.e. 13.5-year derogations and time-unlimited derogations associated with those (developed based on ECHA, 2025a)



Note: 'TULAC' stands for textile, upholstery, leather, apparel and carpets. 'PFPE' stands for perfluoropolyethers.

3.2 Identification of applications of PFAS in scope of the assessment for which production is prevalent in the Netherlands

To identify applications of PFAS that fall within the scope of a proposed derogation of a duration of 13.5 years (or a time-unlimited derogation associated with one of those 13.5-year derogations) for which production (partly) takes place in the Netherlands, two strands of evidence were used.

The main source of evidence are comments submitted to the six-month consultation on the REACH restriction proposal that took place from March 2023 until September 2023. During this consultation, the European Chemicals Agency (ECHA) received over 5 600 comments that were submitted by more than 4 400 companies, other stakeholder organisations and individuals. With more than 100 comments, the Netherlands were among the top ten countries with most comments submitted. The number of submitted comments was only exceeded by submissions from six European countries (Sweden, Germany, Belgium, Italy, France and the United Kingdom) and three non-European countries (Japan, China and the United States) (ECHA, 2023a). This consultation specifically asked for information on (amongst other):

- Potentially missing uses of PFAS not or (not extensively covered) in the REACH restriction proposal published in 2023 and the state of the development of alternatives for these uses; and
- Uses for which insufficient substantiated evidence was available to determine the need for a derogation.

In addition, it was possible to comment on any other use assessed in the REACH restriction proposal if stakeholders wished to do so (ECHA, 2023b). As such, submitted comments were considered to constitute the most comprehensive and recent set of company-level information on applications of PFAS for the Netherlands at the time of data collection, i.e. before March 2026. This is why they were used as the main source of evidence.

While the consultation on the REACH restriction proposal was open to the general public, it cannot be assumed that all companies located in the Netherlands that use PFAS for the production of products (mixtures or articles) for sale to industrial or professional customers or households reacted to the six-month consultation. As such, any developed overview of applications that benefit from a proposed derogation of a duration of 13.5 years (or a related time-unlimited derogation) for which production (partly) takes places in the Netherlands might be incomplete.

To complement the overview of applications, the list of members made available on the website of VNO-NCW was therefore consulted to complement the analysis of comments submitted to the consultation. This list of members is used as the second source of evidence as VNO-NCW is considered to represent the vast majority of private companies that are active in the Netherlands: As noted in Section 2, VNO-NCW reports to represent 300 000 businesses in the Netherlands that account for 90 percent of employment in the private sector.

To identify comments submitted to the consultation by Dutch stakeholders, the so-called RCOM index (ECHA, 2023c) – a spreadsheet published on the ECHA website was used. This spreadsheet contains information on, e.g. the identification (ID) number assigned to submitted comments, the type of organisation that submitted the comment (as declared by the submitter based on a list of options) and (when non-confidential) the name of the organisation that submitted the comment. For each comment, the location of the organisation and the location of the submitter is also reported. This information was used to

identify comments that are relevant for the analysis. All comments for which the Netherlands was reported as either the location of the organisation or the location of the submitter were considered for the analysis. For each comment, information submitted through the web form on the ECHA website and non-confidential attachments were reviewed to identify applications of PFAS that fall within the scope of relevant derogations for which production (partly) takes place in the Netherlands. This information is made publicly available on the ECHA website in the entry for the REACH restriction on PFAS in the so-called registry of restriction intentions until outcome. Confidential attachments were not considered for the analysis. Information on the number of comments for which either the organisation or the submitter is located in the Netherlands is provided in Section 4.1, together with information on the number of comments submitted by different types of stakeholders. Section 4.1 also provides an overview of the share of comments that contain confidential attachments.

To identify relevant applications of PFAS and identify the derogation within whose scope the application described by the stakeholder falls, each comment was reviewed with a focus on extracting information on:

- The stakeholder's application of PFAS and related production activities;
- Information on the relevant industry sector in the Netherlands; and
- Information on research and development activities.

Information on the industry sector, such as indications pointing to the existence of Dutch companies that are competitors of the company, were extracted, where available, as this facilitates the development of a more comprehensive overview of relevant production activities. This is especially the case as it cannot be assumed, as mentioned above, that all Dutch companies using PFAS for the production of their products reacted to the consultation. Information on research and development activities was extracted as this information helps with developing an understanding of the stakeholder's position in the supply chain. When the name of the organisation that submitted the comment was reported in ECHA (2023c), the website of the organisation was also reviewed with the aim to extract further information on the company and complementary information on research and development activities.

Based on the collected information, each comment was classified as either relevant or non-relevant for the identification of applications of PFAS for which production is prevalent in the Netherlands (and therefore national subsidies for research and development). Ten reasons were used to classify comments as non-relevant. Further details on the reasons used to classify comments as relevant and non-relevant are provided in Section 4.1. Section 4.2 provides an overview of the specific 13.5-year derogations (or associated time-unlimited derogations) for which relevant production activities were identified, together with an indication on the number of stakeholders whose activities were linked to the specific derogations. Details on the described applications are also provided in this section. As the focus is on highlighting relevant applications for which production takes place in the Netherlands rather

than the identification of specific companies that might play a role in developing alternatives, the report does not refer to organisations by name. For the same reason, no direct reference to websites is provided but it is clearly highlighted when presented information was found on the website rather than in the comment.

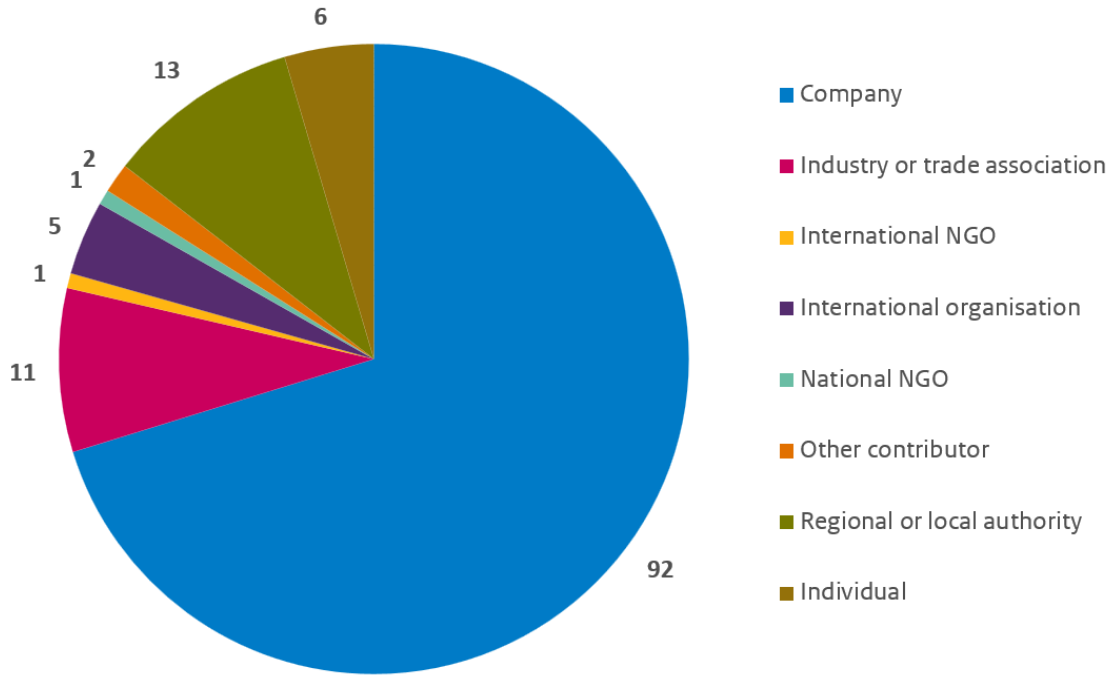
To complement the overview based on consultation comments, the list of members published on the website of VNO-NCW (see VNO-NCW, 2026c) was screened with the aim to identify members that might be active in sectors whose activities relate to any of the 13.5-year derogations or time-unlimited derogations associated with those. Where a link is identified, further research on the respective websites of members was conducted to confirm whether the VNO-NCW members can be expected to produce products falling within the scope of relevant derogations. For this purpose, information on the activities of the relevant VNO-NCW member was extracted from its website (i.e. sections describing the organisation, news release sections and event pages) together with information on research and development activities. Extracted information was used to link the activities of relevant VNO-NCW members to relevant derogations. The results of this analysis are presented in Section 4.3.

4 Results

4.1 Results of the analysis of comments submitted to the consultation on the REACH restriction proposal

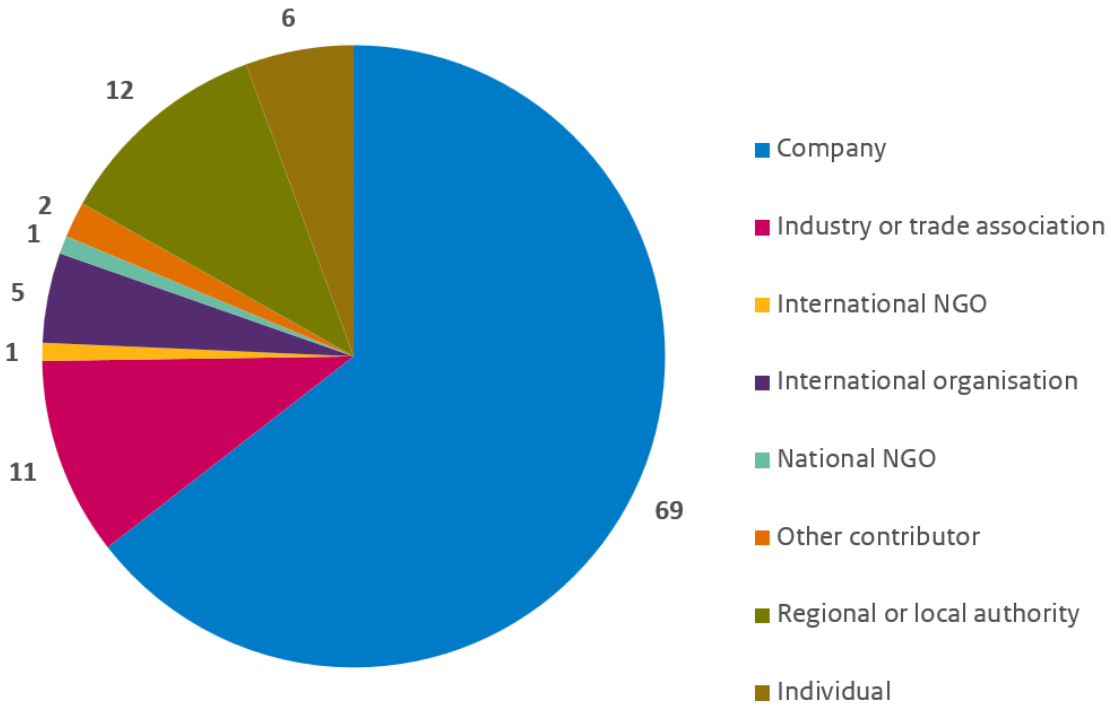
In total, 131 comments were submitted by Dutch entities during the consultation on the proposed PFAS restriction. Most of the comments (around 70%) came from companies, while the remaining around 30% were provided by stakeholders that self-classified as an industry or trade association, international or national non-governmental organisation (NGO), international organisation, regional or local authority, individual or other contributor (see Figure 4). The two entities that self-classified as other contributor are a drinking water provider and an entrepreneurial project group affiliated with a Dutch university.

Figure 4 Number of comments, of a total of 131 comments, submitted by different types of entities (based on own analysis of information in ECHA, 2023c)



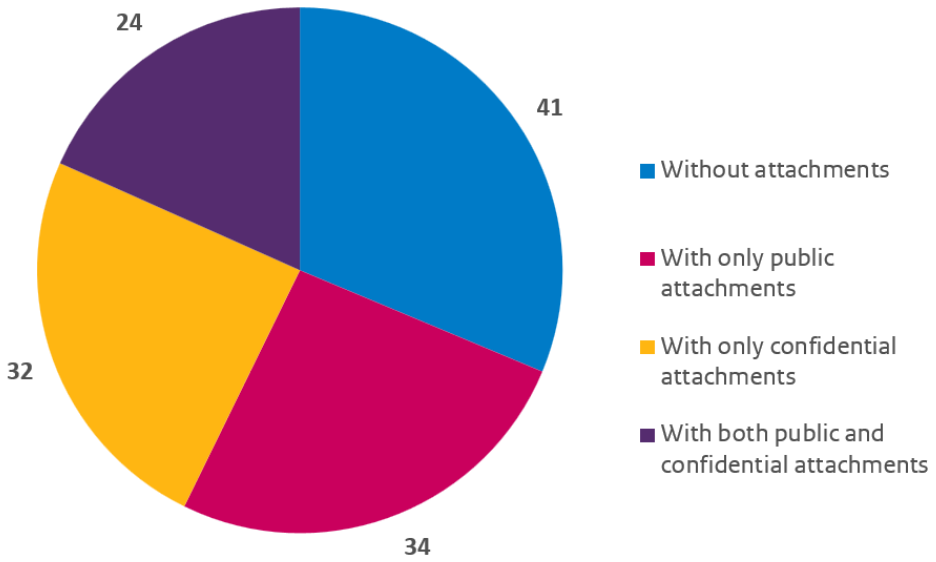
Some of the entities submitted multiple comments. Consequently, the total number of entities (107) is lower than the total number of comments (131) (see Figure 5). Among these 107 entities, companies form the largest group, with 69 Dutch companies (around 64%). For most other types of submitting entities (i.e. industry or trade associations, international or national NGOs, international organisations, other contributors, and individuals) the number of comments and number of submitting stakeholders is identical. Only among the regional or local authorities did one entity submit two comments (12 entities and 13 comments).

Figure 5 Number of submitting entities, of a total of 107 entities, per type of entity (based on own analysis of information in ECHA, 2023c)



During the consultation on the REACH restriction proposal, submitting entities could submit attachments publicly or confidentially. As shown in Figure 6, 41 comments submitted by Dutch entities (around 31%) did not include any attachments, while 90 comments (around 69%) did include attachments. Of these 90 comments, 34 comments had only public attachments; 32 comments had only confidential; and 24 comments had both public and confidential attachments. For 75 of the 131 submitted comments (around 57%), the analysis in this report is thus based on the entire submission. For 56 comments (around 43%), all or some of the attachments were not taken into consideration for the analysis due to their confidentiality status.

Figure 6 Number of comments, of a total of 131 comments, as part of which confidential attachments were submitted



As outlined in Section 3, which describes the approach taken, all the comments submitted by Dutch entities were assessed to determine whether the described applications are relevant for potential national subsidies for research and development activities due to benefitting from a derogation of a duration of 13.5 years (or a time-unlimited derogation associated with one of those 13.5-year derogations). Each comment was classified as either relevant or non-relevant. Relevant comments include comments that cover one or several applications of PFAS benefitting from a relevant derogation for which the production of products (mixtures or articles) at least partly takes place in the Netherlands. Comments were considered irrelevant when:

- The submission covers an organisation that does not manufacture or use PFAS for the production of mixtures or articles but only makes use of such mixtures or articles, a so-called downstream user;
- The key production/research and development sites are located outside of the Netherlands;
- There is no relevant information on industrial activities in the Netherlands;
- The described application does not benefit from a derogation of 13.5 years (or a time-unlimited derogation associated with any of those);
- The submitter is a non-industry stakeholder;
- The stakeholder is an industrial stakeholder that does not manufacture or use PFAS for the production of mixtures or articles and only benefits from the positive, e.g. environmental, impacts of a restriction;
- The submitter is an industry association;
- There is unclarity about the relevant application of PFAS based on the publicly available information;
- The comment is (largely) a duplicate of another comment; or

- The comment is the second submission of a stakeholder falling in an irrelevant stakeholder type category.

Across all submissions by Dutch entities, 45 comments (34%) were submitted by an upstream user (i.e. manufacturer or formulator using PFAS in its products) and describe applications benefitting from a derogation of 13.5 years in total (or a time-unlimited derogation associated with one of those 13.5-year derogations). However, 19 of these 45 comments cover applications for which another comment from the same stakeholder already covers the same or similar applications falling within the scope of the same derogation. As such, these comments were not linked to any derogation to avoid double-counting. Consequently, 26 comments (20% of all Dutch comments) are linked to one or more derogations. These 26 comments form the empirical basis for the list of relevant applications presented in the next section.

The most common reasons for a comment to not be relevant are that the submitter is/refers to a downstream user (25; 19% of all comments submitted by Dutch entities) and that the submitter is a non-industry stakeholder (23; 18% of all comments submitted by Dutch entities). For 13 comments (i.e. 10% of all comments), it is not clear whether the comment covers applications benefitting from a 13.5-year derogation based on publicly shared information. As such, those comments are not accounted for in the results presented in Section 4.2. All other reasons are less common. Further details on the number of comments falling in each category and the content of comments classified as irrelevant are provided in the appendix.

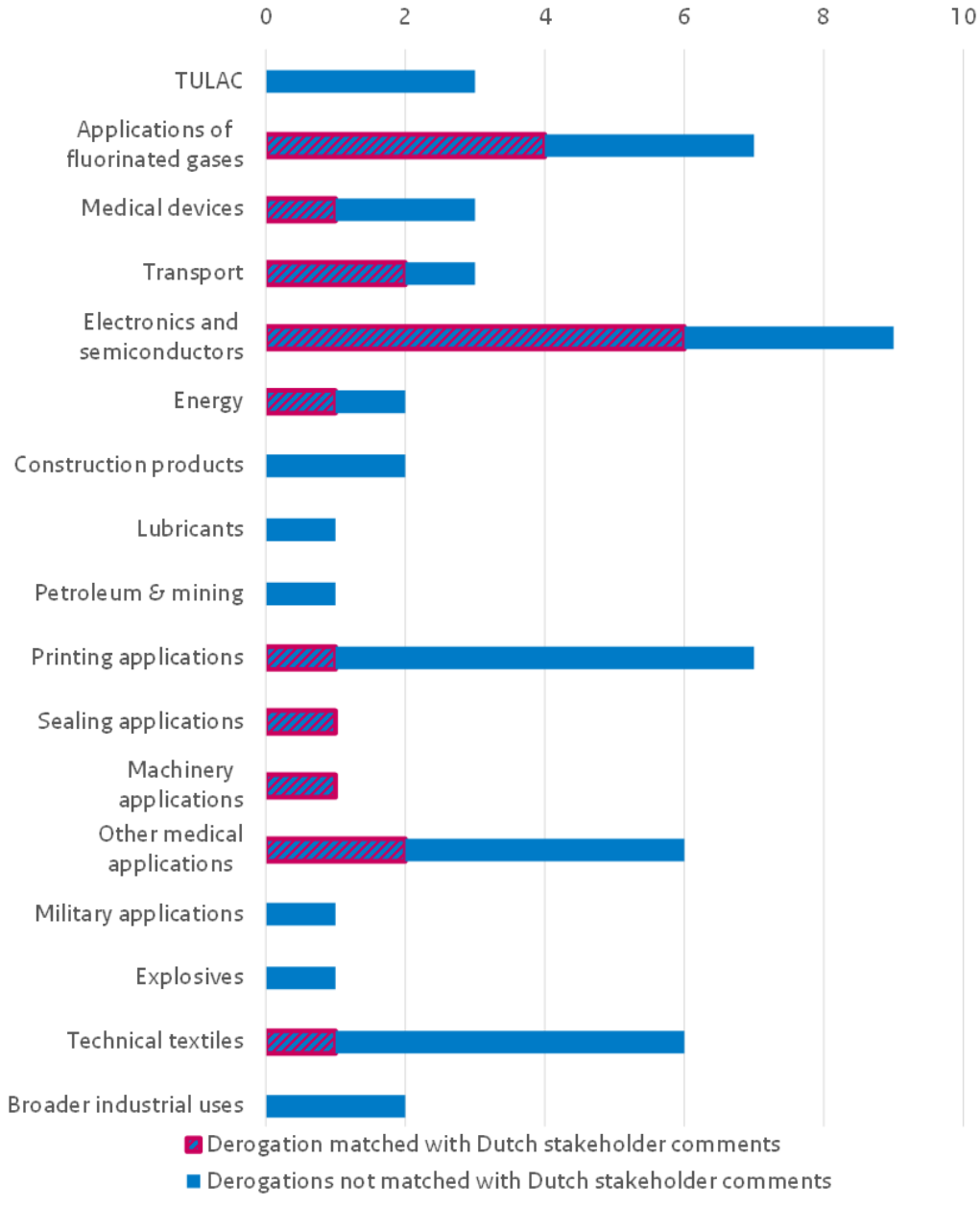
4.2 Relevant 13.5-year derogations (or time-unlimited derogations associated with any of those) for which production (partly) takes place in the Netherlands

As explained in Section 3, 56 derogations are considered to be of relevance to the assessment. These 56 derogations are distributed across 17 different use sectors defined by the five countries that developed the REACH restriction proposal (as illustrated in Figure 7). They cover areas such as transport, energy, electronic and semiconductors, medical devices, technical textiles, sealing and machinery applications, printing, and applications of fluorinated gases.

For these 56 derogations, stakeholder comments submitted during the public consultation were analysed to identify cases where PFAS-dependent production activities appear to be prevalent in the Netherlands and can be directly linked to specific derogations. Across the 17 use sectors, 10 sectors could be matched with at least one stakeholder comment that provides sufficiently detailed information to indicate that production of products (mixtures or articles) is prevalent in the Netherlands for any of the corresponding derogated applications. These 10 sectors include, among others, transport-related components and air-conditioning applications, medical devices and other medical applications, sealing and machinery applications, technical textiles (specific filtration applications), printing components, fuel cells and

electrolysers (covered under energy applications), and applications of fluorinated gases (e.g. refrigerants and clean fire-suppressing agents). Within these 10 sectors, applications for which production is taking place in the Netherlands were identified in relation to 20 distinct derogations on the basis of stakeholder information. For each of these derogations, the subsequent sections provide further details on the reported PFAS-dependent applications (e.g. fluoropolymer-based headlamp lenses, PFAS-containing clean-agent fire-suppression systems, fluoropolymer tubing for semiconductor manufacturing, photonic components relying on PFAS materials, fluoropolymer-containing process instrumentation, PFAS-based membranes for gas separation).

Figure 7 Derogations per use sector that are in scope of assessment and matched with comments submitted to the consultation on the REACH restriction proposal



4.2.1 *Applications of fluorinated gases*

The REACH restriction proposal includes seven derogations related to applications of fluorinated gases of a duration of at least 13.5 years. For four of those derogations, comments submitted to the consultation revealed applications for which production is considered to be prevalent in the Netherlands, i.e.:

- Refrigerants in laboratory test and measurement equipment (Derogation 5f);
- Refrigerants in refrigerated centrifuges (Derogation 5g);
- Fluorinated gases used as clean fire suppressing agents where current alternatives damage the assets to be protected or pose a risk to human health (Derogation 5k); and
- Refrigerants, clean fire-suppressing agents and insulation gases for maintenance and refilling of existing HVACR, fire-suppressing and switchgear equipment put on the market before 18 months (or placed on the market after 18 months after entry into force based on an applicable derogation) (Derogation 5n).

As shown in Table 1, between one and three stakeholders have been found to produce products that are considered to fall within the scope of those specific derogations.

Table 1 Number of stakeholders considered to produce products that fall within the scope of specific derogations relating to applications of fluorinated gases

Associated paragraph number in ECHA (2025a)	**Derogation as proposed in ECHA (2025a)**	**Number of stakeholders considered to produce products that fall within the scope of the derogation based on consultation comments**
5f	Refrigerants in laboratory test and measurement equipment	1
5g	Refrigerants in refrigerated centrifuges	1
5k	Fluorinated gases used as clean fire suppressing agents where current alternatives damage the assets to be protected or pose a risk to human health	1
5n	Refrigerants, clean fire-suppressing agents and insulation gases for maintenance and refilling of existing HVACR[7], fire-suppressing and switchgear equipment put on the market before 18 months (or placed on the market after 18 months after entry into force based on an applicable derogation)	3

[7] HVACR stands for 'Heating, ventilation, air conditioning and refrigeration'.

In relation to the derogations for refrigerants in laboratory test and measurement equipment (5f) and refrigerants in refrigerated centrifuges (5g), one company (comment ID #8301) reports that it supplies a range of fluorinated gases primarily for use in refrigeration and air conditioning applications. According to the company, the supplied gases are used as working fluids in closed refrigeration circuits and are characterized by low toxicity and non- or difficult-to-ignite behaviour, which is why they are often referred to as safety refrigerants. The submission does not contain any details on the specific end uses for which supplied refrigerants are used but the company might produce and supply fluorinated gases that are used as refrigerants in applications that benefit from the derogations for laboratory test and measurement equipment and refrigerated centrifuges.

One stakeholder (comment ID #8885) furthermore reports the availability and supply of non-PFAS clean fire suppressants for a particular market segment. It reports that it supplies an inert gas system that is based on nitrogen. Clean fire-suppression systems based on inert gases are used to protect sensitive assets (e.g. equipment or installations) in situations where conventional agents may damage the assets or pose risks to human health. The reported technology uses sealed steel cylinders containing a solid propellant that, upon activation during an incipient fire, generates nitrogen gas and retains the solid residues inside the casing. The nitrogen displaces oxygen and suppresses the fire. Other existing clean fire-suppression systems are clean-agent systems using fluorinated gases (e.g. HFC-227ea, HFC-125, FK-5-1-12 and blends) that are stored under pressure, and PFAS-free inert-gas systems using argon or mixtures of nitrogen and argon. In all cases, the agent is released upon fire detection to extinguish the fire without water or foam damage; inert gases act by lowering oxygen concentration. The nitrogen-based system supplied by the company is reported to be relevant for object protection which – according to the stakeholder – covers the protection of individual items or equipment in confined, normally unoccupied spaces such as IT server or battery cabinets and as such is different from room protection. According to the stakeholder, room protection covers the protection of enclosed spaces intended for human occupancy. The company, which according to its website, supplies patented technology for fire suppression highlights that prolonged derogations for the market segments where alternatives already exist could slow the technological and commercial expansion of these alternatives. As such, it is clear that production of clean fire-suppressing solutions is prevalent in the Netherlands and that Dutch industry might be able to play a role in developing alternatives for applications of PFAS benefitting from the derogation (5k) on clean fire suppressing agents where current alternatives damage the assets to be protected or pose a risk to human health.

In relation to the derogation for maintenance and refilling of existing equipment (5n), three stakeholders (#7440, #8301, #8885) describe the use of fluorinated gases in legacy heating, ventilation, air conditioning and refrigeration (HVACR), fire-suppression and electrical switchgear systems. In HVACR systems, fluorinated refrigerants function as working fluids in closed circuits and are - according to stakeholder

information - valued for low toxicity and non- or low flammability which is reported to be important for safety in buildings and industrial facilities. In fire-suppression systems, clean agents in legacy equipment include (as mentioned in the preceding paragraph) some PFAS-based agents. Continued access to the corresponding clean agents is considered necessary to maintain the designed performance of existing systems until end-of-life and avoid premature scrapping of assets. In electrical switchgear (referred to in the comment with ID #7440), fluorinated gases are used as insulating and arc-quenching media; suitable gases are needed for topping-up or refilling during maintenance and leak repair to maintain electrical safety and grid reliability. As such, potential innovations by Netherlands-based companies supplying refrigerants and clean fire-suppressing systems could simultaneously help with gradually reducing the need for the derogation for maintenance and refilling. On its website, the company submitting the comment with ID #7440 refers to itself as "the world leader in the supply and lifecycle management of refrigerants and associated products and services". It claims that "[its] products and services help [its] customers worldwide to move to more environmentally friendly products and processes." As such, this company might also be able to contribute to innovation.

4.2.2 Medical devices

The REACH restriction proposal includes three derogations of a duration of 13.5 years that are related to medical devices, all of which are limited to the use of fluoropolymers and perfluoropolyethers (PFPEs).

In the consultation, three stakeholders (comment IDs #4062/#4403, #6424, #8556) report industrial activities relating to applications of PFAS that fall within the scope of one of these derogations, i.e.:

- Fluoropolymer and PFPEs for the use in invasive medical devices (e.g. tubes and catheters) (Derogation 6d).

The applications for which production is prevalent in the Netherlands are several invasive and intra-ocular medical applications where fluoropolymers and PFPEs are used as functional materials under strict mechanical and safety constraints.

One company (comment IDs #4062/#4403) reports using a fluoropolymer (PTFE) for the production of internally lubricated engineering thermoplastic compounds for use in medical devices. Those compounds are reported to provide low-friction, reliable movement and durability in a variety of medical devices such as autoinjectors (e.g. for diabetes and anaphylaxis treatment) and in minimally invasive and robotic surgery tools, where precise and reproducible mechanical performance is required.

In ophthalmology (comment IDs #6424, #8556), PFAS are used in two ways by Netherlands-based companies.

One company (comment ID #6424), that refers to itself as a major manufacturer of rigid gas-permeable contact (RGP) lenses, explains that fluoropolymers are integral components of RGP contact lenses used to

treat complex eye conditions. According to the company, RGP lenses rely on combinations of silicone-based and fluorinated compounds to obtain high oxygen permeability, shape stability and resistance to surface deposits. These properties are essential for patient safety, comfort and infection control. Fluorinated components are necessary because lenses based on silicones alone tend to attract deposits and may pose safety concerns. The company reports to have extensive experience with developing and implementing new lens materials and designs. As such, it might be able to play a role in identifying and developing alternatives to fluoropolymers for this use.

Another stakeholder (comment ID #8556) reports to supply medical devices to surgeons. PFAS-based ocular endotamponades produced by the company (that use perfluorodecalin, perfluorooctane, hexafluoroethane or perfluoropropane as active ingredient) are used intra-ocularly during retinal detachment surgery as liquids or gases that help reattach and support the retina during healing. These endotamponades are reported to be classified as medical devices under relevant regulatory standards. Their density, optical clarity, stability and biocompatibility are key to the intended surgical function according to the stakeholder. They thereby contribute to preventing permanent vision loss or blindness. On its website, the company refers to itself as "one of the world's leading suppliers of equipment, instruments and liquids for ophthalmic surgery". It reports to "improve […] eye surgery globally and maximize […] surgeon control by providing innovative quality approaches for eye disorders". As such, it might be able to play a role in identifying and developing alternatives.

4.2.3 Transport

The REACH restriction proposal includes three derogations of a duration of 13.5 years related to transport. For two of those derogations, comments submitted during the consultation revealed applications for which production is considered to be prevalent in the Netherlands, i.e. the derogations for:

- Fluoropolymers and PFPEs for the use in: (i) Vehicle systems, components or separate technical units [(excluding 'sealing applications'[8], batteries and fuel cells, lubricants, electronic and electrical systems, HVACR, technical textiles)] that are subject to EU vehicle type approval, where the type approval was obtained within 13.5 years after entry into force (e.g., motor vehicles within the scope of Regulation (EU) 2018/858, (EU) 2019/2144 or Directive 2007/46/EC, agricultural and forestry vehicles within the scope of Regulation (EU) 167/2013, aircraft within the scope of Regulation (EU) 2018/1139 or (EU) 748/2012, watercraft within the scope of Directive 2013/53/EU or 2009/45/EC, and rail vehicles within the scope of Regulation (EU) 2016/797 or Directive (EU) 2016/798); or (ii) systems, components or separate technical units [(excluding 'sealing applications', batteries and fuel cells, lubricants, electronic and electrical systems, HVACR, technical textiles)] in vehicles that are not

[8] Please note that the five countries that submitted the REACH restriction proposal conducted a separate assessment for sealing applications to determine the need for derogations. For further information on production activities in the Netherlands relating to sealing applications, please refer to Section 4.2.7.

within the scope of paragraph a, where the use of fluoropolymers or perfluoropolyethers are strictly necessary for safety or environmental performance of those vehicles until 13.5 years after entry into force, e.g., braking, restraint, lighting/signalling, driver assistance systems, emission control. (Derogation 6f); and
- Refrigerants in mobile air conditioning systems and heat pump systems in all vehicles other than light duty electrical vehicles (Derogation 5q)[9].

As shown in Table 2, two stakeholders each have been found to produce products that are considered to fall within the scope of those specific derogations.

Table 2 Number of stakeholders considered to produce products that fall within the scope of specific derogations relating to transport

Associated paragraph number in ECHA (2025a)	**Derogation as proposed in ECHA (2025a)**	**Number of stakeholders considered to produce products that fall within the scope of the derogation based on consultation comments**
6f	Fluoropolymers and perfluoropolyethers for the use in: (i) vehicle systems, components or separate technical units that are subject to EU vehicle type approval, where the type approval was obtained within 13.5 years after entry into force; or (ii) systems, components or separate technical units in vehicles that are not within the scope of paragraph a, where the use of fluoropolymers or perfluoropolyethers are strictly necessary for safety or environmental performance of those vehicles	2
5q	Refrigerants in mobile air conditioning systems and heat pump systems in all vehicles other than light duty electrical vehicles	2

For the derogation on fluoropolymers and PFPEs in vehicle systems, components or separate technical units (6f), two Dutch stakeholders describe applications where fluoropolymers and fluorinated additives are

[9] Derogation 5q also contains a proposed derogation for refrigerants in mobile air conditioning systems and heat pump systems in light duty electrical vehicles. As the proposed derogation for these vehicles has a duration of 6.5 years, this part of the derogation is not considered for this assessment.

embedded in critical vehicle systems and components. According to the comments, these materials provide specific combinations of low friction, sealing performance, durability and optical quality that are considered important for the safety operation of vehicles.

One stakeholder (comment ID #4273) reports the use of fluoropolymer (PTFE) and fluoroelastomer (FKM) parts in shock absorbers and associated motion/sealing components. PTFE elements guide the linear motion of pistons and piston rods, providing low friction so that damping forces are not adversely affected and wear on counterpart surfaces is reduced. FKM parts function as demanding linear-motion seals, ensuring reliable function under varying temperatures, pressures and mechanical loads. These components form part of safety-related dampers in both road and rail vehicles and contribute directly to proper dynamic behaviour and safe driving conditions. The stakeholder reports global usage of PTFE and FKM by its company in the order of several tonnes per year for these applications.

Another stakeholder (comment ID #6292) reports the use of a specific fluorinated additive – invented by the company – at very low concentration (about 10 ppm) as an anti-static agent in melt-process polycarbonate grades for automotive headlamp lenses. According to the stakeholder, polycarbonate has largely replaced glass as the main lens material because of its transparency, reduced weight and high impact resistance. However, melt-process polycarbonate can attract dust, which affects lens translucency, appearance and potentially light output. The additive is incorporated to mitigate dust attraction and maintain optical performance equivalent to lenses produced via older interfacial (phosgene-based) processes. These headlamp lenses are integral parts of vehicle lighting systems that enable illumination of the surroundings for safe driving, especially at night and in adverse weather.

For the derogation on refrigerants in mobile air conditioning and heat pump systems in all vehicles other than light duty electrical vehicles (5q), two stakeholders (comment IDs #7440, #8301) report activities relating to PFAS-containing fluorinated gases and their management in mobile air conditioning and other refrigeration systems.

One stakeholder (comment ID #7440) reports on refrigerants from a lifecycle-management perspective. According to its submission, recovery, reclamation and repurposing processes are used to delay the point at which PFAS-containing refrigerants reach their end-of-life stage and, in some cases, to reduce the need for virgin production. On its website, the company refers to itself as "the world leader in the supply and lifecycle management of refrigerants and associated products and services". It states that "[its] products and services help [its] customers worldwide to move to more environmentally friendly products and processes. As such, this company might be able to contribute to innovation in this field.

Another company (comment ID #8301), already referred to in Section 4.2.1, explains that it offers a range of fluorinated gases primarily used in the refrigeration and air conditioning industry. According to the

company, these gases are often referred to as “safety refrigerants” due to their non-toxic and non-flammable or difficult-to-ignite properties. The company notes that such refrigerants are embedded in existing vehicle fleets and service infrastructures and contribute to maintaining thermal comfort and cabin safety under varying climatic and operating conditions.

4.2.4 Electronics and semiconductors

The REACH restriction proposal includes nine derogations of a duration of 13.5 years that are related to electronics and semiconductors. For six of those derogations, comments submitted during the consultation revealed applications for which production is considered to be prevalent in the Netherlands, i.e.:

- Fluoropolymers and PFPEs used for wires and cables (including connectors) (Derogation 6h);
- Fluoropolymers and PFPEs used for insulation material of electronic components (excluding cables, wires, connectors) (Derogation 6i);
- Fluoropolymers and PFPEs used as anti-drip agents in plastics of electronic components (Derogation 6j);
- Photonics (Derogation 5u);
- Manufacturing of semiconductors (Derogation 5w); and
- Coatings and films of electronic components (excluding displays and lenses) (Derogation 5x).

Several stakeholder submissions cover applications relating to multiple derogations for electronics and semiconductors. In particular, one stakeholder (comment ID #7919) provides information relevant to the derogations on wires and cables (6h), insulation materials (6i), manufacturing of semiconductors (5w) and coatings and films (5x). Another stakeholder (comment ID #8666) reports PFAS-dependent uses for production activities linked to photonics (5u), manufacturing of semiconductors (5w) and coatings and films (5x).

As shown in Table 3, between one and three stakeholders each have been found to produce products that are considered to fall within the scope of the six derogations.

Table 3 Number of stakeholders considered to produce products that fall within the scope of specific derogations relating to electronics and semiconductors

Associated paragraph number in ECHA (2025a)	Derogation as proposed in ECHA (2025a)	Number of stakeholders considered to produce products that fall within the scope of the derogation based on consultation comments
6h	Fluoropolymers and perfluoropolyethers for the use in: Wires and cables (including connectors	1
6i	Fluoropolymers and perfluoropolyethers for the use in: Insulation material of electronic components (excluding wires, cables and connectors)	1
6j	Fluoropolymers and perfluoropolyethers for the use as: Anti-drip agent in plastics of electronic components	1
5u	Photonics	1
5w	Semiconductor manufacturing	3
5x	Coatings and films of electronic components (excluding displays and lenses)	2

In relation to the derogations for wires and cables (6h) and for insulation material of electronic components (6i), one stakeholder (comment ID #7919) is considered to use PFAS in advanced miniature components and solutions (e.g., balanced armature receivers, high-end microphones, and electromechanical components). While the stakeholder only provided confidential information in the consultation, which is (as explained in Section 3) not considered for the analysis, information on the company website allowed for an identification of relevant derogations. On the website, the company refers to itself as "a global leader in designing and manufacturing components and solutions for hearing instruments and for the professional audio segment". According to the information on the website, components and assemblies in hearing instruments and professional audio applications are densely packed and subject to continuous mechanical stress, temperature variation and potential exposure to moisture and body-related conditions, while needing to maintain high signal integrity and acoustic performance over long service lifetimes.

In relation to the derogation on fluoropolymers and PFPEs used as anti-drip agents in plastics of electronic components (6j), one stakeholder in multiple submissions (comment IDs #4009, #4080, #4406, #4407, #7304, #8196) reports the incorporation of PTFE into thin-wall flame-

retardant polycarbonate resins used in consumer electronics housings. These housings have wall thicknesses below 1 mm. According to the stakeholder, these thin-walled parts play a critical role in consumer safety and require PTFE as an anti-drip additive. PTFE, in combination with other flame-retardant additives, is described as increasing ignition resistance and lowering the probability of a fire event; if a fire does occur, the unique properties of PTFE help prevent molten polymer from dripping, thereby limiting flame spread and allowing more time for escape. The stakeholder emphasises that this anti-drip function is essential to meet flammability requirements for thin-walled polycarbonate while maintaining adequate impact resistance and ductility. It further notes that thin-walled designs reduce plastic consumption and solid-waste generation compared with earlier consumer-electronics housings with typical wall thicknesses of 2–3 mm (potentially 100–200 % higher resource use and waste, depending on application), and that lighter products require less energy for transport, with associated CO_2 savings. The stakeholder reports that extensive research has not identified alternatives that provide adequate flammability performance for thin-walled polycarbonate while preserving impact resistance and ductility and therefore requests a 13.5-year derogation to allow time to invent new materials or develop viable alternatives to PTFE as an anti-drip additive in flame-retardant polycarbonate resin formulations.

In relation to the derogation for photonics (5u), one stakeholder (comment ID #8666), representing a large multinational electronics manufacturer, refers to a broad range of electronic and electrical equipment and components. This stakeholder, which also provides information on semiconductor-related applications (5w) and coatings and films of electronic components (5x), explains that they are involved in development, production, sales and service activities for a broad array of products, including components and home and commercial electronic equipment, as well as equipment for telecommunications, industry, automotives, aviation and housing. In the submission, the stakeholder lists numerous photonic and related electronic applications in which PFAS-based materials are used to achieve functional properties such as precise optical performance, signal transmission, insulation, surface behaviour and durability in components and devices. These include photonic and related electronic applications where fluoropolymers, PFPEs and other PFAS are considered essential to meet demanding performance and reliability requirements. The stakeholder notes that these PFAS-dependent functions are embedded in complex, multilayered global supply chains involving globally thousands of component suppliers.

In relation to the derogation on manufacturing of semiconductors (5w), three stakeholders (comment IDs #4473, #7919, #8666) describe PFAS embedded in critical parts of semiconductor manufacturing and semiconductor-based components and systems. One submission (comment ID #4473) of a manufacturer of equipment explains that so-called semiconductor and related manufacturing equipment, which forms a key part of the semiconductor manufacturing process, utilises

PFAS-based materials that are in particular based on polymeric PFAS. These systems are reported to be complex and contain more than 160 000 parts. PFAS-based materials are reported to be used in sealings, cables, hoses, pellicles and similar parts that operate under harsh conditions such as high UV exposure and ultra-clean vacuum environments. These applications are described as requiring a combination of very high purity (low release of organic and inorganic contaminants), low outgassing, mechanical robustness (including flexibility) and, in some cases, optical transparency.

Another stakeholder (comment ID #7919), which is also linked to the derogations on wires and cables as well as insulation material (6h and 6i) only provided confidential information in the consultation. Confidential information is (as explained in Section 3) not considered for the analysis. The company website, however, contains relevant information. In the product overview, the company refers to miniature electret and micro-electromechanical system (MEMS) microphones for hearing aids. As noted in ECHA (2025b), PFAS used in micro-electromechanical systems are covered by the derogation for PFAS used for the manufacturing of semiconductors.

The multinational electronics manufacturer (comment ID #8666) provides a broader perspective on semiconductor-related applications of PFAS within electrical and electronic equipment. In the annexes of its submission, the stakeholder describes very comprehensive lists of functions and properties in electrical and electronic equipment that are reported to rely on PFAS materials to attain required performance, including applications in semiconductors. It emphasises that, for the applications listed in the annexes, there are currently no feasible substitutes that can achieve the required performance and reliability in electrical and electronic equipment and requests general and specific derogations to allow time to develop and test alternatives. Based on the stakeholder's comment and the website, PFAS-dependent materials and functions are used/relevant across global supply chains for electrical and electronic equipment involving more than 13 000 suppliers. These materials are regarded as essential to meet demanding performance and reliability requirements in semiconductor-related applications. According to the website, the company's European headquarters are located in Amsterdam, with activities in marketing, sales, manufacturing, design and research and development across Europe, and it engages in collaborative research on advanced semiconductor technology, including silicon photonics, via centres in the Netherlands and Belgium.

In relation to the derogation for coatings and films of electronic components, excluding displays and lenses (5x), two companies (comment IDs #7919, #8666) are considered to manufacture products that fall within the scope of this derogation. One stakeholder (comment ID #7919), previously linked to wires and cables (6h), insulation material (6i) and semiconductors (5w), constitutes, according to its website, a business focused on advanced miniature components for hearing instruments and professional audio. The product overview on the website mentions sensors, e.g. voice-pick-up bone sensors for special headsets or earphones. Sensors (and associated coatings and/or

films) fall within the scope of the derogation on coatings and films of electronic components according to ECHA (2026b). Another stakeholder (comment ID #8666) highlights that PFAS-containing materials are embedded across complex, multilayered supply chains for electrical and electronic equipment and are relied upon to achieve required functional properties documented in detailed annexes, such as insulation, stability, surface behaviour and long-term reliability of coated and film-based components.

4.2.5 Energy

The REACH restriction proposal includes two derogations of a duration of 13.5 years that are related to energy applications. In the consultation, one stakeholder (comment ID #9393) reports applications of PFAS that fall within the scope of one of these derogations, i.e.:

- Fluoropolymer and PFPEs for the use in fuel cells and electrolysers (Derogation 6k).

The stakeholder (comment ID #9393) describes work on replacing fluoropolymers used in gas diffusion layers and microporous layers of electrochemical devices, in particular proton-exchange membrane (PEM) hydrogen fuel cells. In its submission, the stakeholder explains that a fluoropolymer (PTFE) is currently used as hydrophobiser and binder in these layers, and that this function is relevant not only for fuel cell devices but also for other electrochemical applications, such as the cathode porous transport layer of PEM electrolysers and CO_2 electrolysis. The stakeholder reports that, in its laboratory, it is developing environmentally friendly coatings intended as alternative to PTFE in these uses. The coatings are described as achieving similar extrinsic (hydrophobic) contact angles to PTFE-dip-coated samples. According to the submission, further investigation is needed to ascertain the long-term stability and durability of these novel coatings at timescales relevant for commercial fuel cell operation, and the stakeholder anticipates a development timeline of approximately three to four years to establish an industry-scale process and validate performance. If required as a result of regulatory requirements and market demand, the stakeholder aims to market these coatings as sustainable alternatives to PTFE in gas diffusion and microporous layers of fuel cells and related electrochemical devices.

4.2.6 Printing applications

The REACH restriction proposal includes seven derogations of a duration of at least 13.5 years that are related to printing applications. Two of those derogations are time-unlimited but directly linked to two 13.5-year derogations.

In the consultation, one stakeholder (comment ID #8802) reports applications of PFAS that fall within the scope of one of these derogations, i.e.:

- Kinetic printing components (Derogation 5ff)

The company reports using PFAS in/for key inkjet printing components including, for example, optical sensor technology, print heads, surface-opposing media, pressure-regulating valves, channel sealing materials,

ink supply tubes, rubber caps and wipers, paper-feeding driver rollers and porous membranes in ink-filling systems. According to the stakeholder, PFAS-containing materials in these components are, at the time of submitting the comment, essential to ensure reliable ink transport, sealing, media handling, drying and fusing performance in printing and copying processes. The submission notes that the company has not yet been able to identify suitable alternatives that fulfil the required characteristics for these key components and is therefore requesting a derogation. Inkjet printing constitutes a form of kinetic printing (ECHA, 2025b).

4.2.7 Sealing applications

The REACH restriction proposal includes one derogation of a duration of 13.5 years related to sealing applications.

Nine stakeholders submitted comment(s) (comment IDs #3881/#4125/#4127/#4128, #4273, #4487, #6082/#6083, #6251, #7095, #8009, #8647 and #8652) reporting production activities relating to applications of PFAS that fall within the scope of this derogation, i.e.:

- Fluoropolymer and PFPEs for sealing applications in industrial uses (Derogation 6p).

These stakeholders describe the application of fluoropolymers (notably PTFE) and fluoroelastomers (FKM) in hoses, tubes and seals for demanding industrial and transport-related applications where reliable sealing and fluid handling are critical.

One company (comment IDs #3881/#4125/#4127/#4128) reports that it manufactures "high-performance PTFE tubing solutions for industries that demand precision, durability and resistance to extreme temperatures, pressure and aggressive chemicals". The company's headquarters and engineering team are located in the Netherlands, and its PTFE tubes are supplied for liquid transport in high-tech environments such as semiconductor manufacturing. In these applications, fluoropolymer tubing is according to provided information essential to meet strict purity requirements and to ensure leak-free transport of aggressive media. The company furthermore reports to use PTFE as liner for rubber hoses supplied to the medical, pharma, cosmetic and food industry.

Another stakeholder (comment ID #4273) describes the use of PTFE and FKM parts for the production of shock absorbers for road and rail vehicles (as mentioned in Section 4.2.3). The FKM parts are used as high-demand linear-motion seals. The stakeholder notes that the dampers are safety-related parts that ensure proper dynamic vehicle behaviour. Although the primary context of this comment is transport safety (Derogation 6f), the described FKM seals correspond to sealing applications that are covered by Derogation 6p.

A further stakeholder (comment ID #4487) reports the use of FKM for sealing applications in propulsion systems in (container) vessels. According to the company's website, it is a supplier of stern seals and

propulsion service provider and manufacturer for the global maritime industry, with its own research and development department and state-of the-art laboratory focusing on the properties and chemical behaviour of stern tube seals and related materials.

Another company (comment IDs #6082/6083) indicates that it supplies hoses used in, e.g. semiconductor manufacturing. The website reveals that the company also supplies assemblies and products used across multiple other segments (e.g., automotive, energy, infrastructure, transport). According to the website, the company advises on and provides industrial hoses and couplings for, e.g. transport and hydraulic systems, and offers services such as on-site hose testing, co-engineering of specific hoses for different applications, and assembly and testing of customised hose sets and sub-assemblies. These activities aim to ensure reliable fluid transport, minimise leakage and downtime, and reduce total cost of ownership. The fluoropolymer-based hoses and components in these industrial fluid-handling systems are part of the sealing applications in industrial uses covered by Derogation 6p.

Another company (comment ID #6251) reports the use of PTFE in radial shaft seals, designed and produced by the company, used in automotive air-conditioning compressors, heat pumps and water pumps. The seals combine rubber and PTFE, with the PTFE seal lip placed behind the rubber seal lip on the fluid/gas side to simultaneously provide good sliding characteristics and high sealing performance, where rubber seal lips would suffer from wear and loss of sealing function. These PFAS-containing radial shaft seals fulfil demanding sealing functions in environments with heat resistance needs and limited lubrication and therefore correspond to fluoropolymer sealing applications in industrial uses.

A manufacturer of instant boiling-water dispensers (comment ID #7095) reports the use of PTFE as the liner material in hoses that form the flow areas for boiling water and water above 100 °C in household appliances. The comment explains that PTFE is selected because it combines high temperature and steam resistance (up to around 140 °C), flexibility to allow convenient connection between boiler and dispenser, and compliance with drinking-water regulations, including hygiene and avoidance of migration that could affect water quality, appearance, smell or taste. The company notes that defects in these hoses would lead to leakage of boiling water and severe damage or dangerous situations, and that alternative materials tested (e.g. cured silicon, modified/cross-linked polyethylene) have not met durability or regulatory requirements. These PFAS-containing PTFE hose liners therefore perform critical fluid-handling and sealing functions in hot-water systems and correspond to fluoropolymer sealing applications in industrial uses covered by Derogation 6p.

Another stakeholder (comment ID #8009) is a manufacturer of sealing devices for industry and reports the use of o-rings as static sealing elements in relation to hazardous fluids. A specific example mentioned are o-rings used in mechanical seals for pumps and other rotating equipment widely applied in the chemical and petrochemical industry.

According to the company's website, it offers consultative services and industrial equipment repair and optimisation for rotary and stationary equipment and fluid-power systems.

Another stakeholder (comment ID #8647) does not provide detailed information on applications for which it uses PFAS in its submission but argues that fluoropolymers should be fully exempted from the proposed REACH restriction. According to its website, the company is a global supplier of fluoroplastic products such as hoses, high-pressure gas hoses, cleanroom tubing, tapes and belts and corrosion-resistant cladding/coatings. These products are supplied to various sectors such as the automotive, medical, food, electrical and pharmaceutical industry and several of those products (tubes and hoses) are used to provide durable, chemically resistant and leak-tight solutions in fluid-handling and sealing applications thereby falling within the scope of Derogation 6p.

Another company (comment ID #8652) does not provide detailed information on its fluoropolymer uses in the comment submitted during the consultation. However, it requests that fluoropolymers should be fully exempted from the proposed REACH restriction, arguing that they should not be regulated in the same way as other PFAS. According to its website, the company is a supplier of fluid-handling solutions, including industrial hoses and hose assemblies, oil-transfer solutions, couplings and accessories, and expansion joints. It emphasises that its products are designed to ensure "smooth, leak-free flow" and improve safety at end-use locations. These fluoropolymer-containing hoses and related components therefore serve leak-tight, durable fluid-handling and sealing functions in industrial systems and fall within the scope of Derogation 6p.

4.2.8 Machinery applications

The REACH restriction proposal includes one derogation of a duration of 13.5 years related to machinery applications.

Five stakeholders submitted comment(s) reporting industrial activities relating to applications of PFAS that fall within the scope of this derogation, i.e.:

- Fluoropolymer and PFPEs for machinery applications in industrial uses (Derogation 6q)

In relation to Derogation 6q, stakeholders (comment IDs #3897, #3979/#3980/#3981/#4062/#4143/#4277/#4278/#4279, #7762, #8647, #8996/#8997) report the use of PFAS for the production of machinery and equipment for industrial processes, including e.g. conveyor systems, pumps and process instrumentation, as well as high-performance thermoplastic components used in complex mechanical assemblies.

One company (comment ID #3897) describes the production of PTFE-coated conveyor belts, tapes and sheets used in high-temperature and non-stick production processes. According to the submission and publicly available information, the company supplies PTFE-coated glass

and aramid conveyor belts and related products to around 1 000 customers annually worldwide, with approximately 70 % of sales being exported and a focus on markets in the Netherlands, Germany, Belgium and the United States. The stakeholder reports annual usage of about 40 tonnes of PTFE in closed PTFE-coated materials, 20 tonnes of PTFE in mesh materials and around 5 tonnes of PFA in films. The company furthermore reports that there are at least three other similar companies in the Netherlands.

Another stakeholder (comment IDs #3979/#3980/#3981/ #4062/#4143/#4277/#4278/#4279) reports the use of PTFE in internally lubricated engineering thermoplastic (ETP) compounds that meet complex thermal, mechanical, optical and electrical property requirements. While the submission highlights medical devices as a key application area (Derogation 6d, see Section 4.2.2), the company – as described in publicly available information – supplies high-performance polymers and specialty compounds for use in smart electronics, robotics and other machinery. Internally lubricated PTFE-containing ETP compounds used in moving parts and precision components contribute to low friction, wear resistance and reliable mechanical performance in machinery assemblies. These uses fall within the scope of machinery applications in industrial environments covered by Derogation 6q, although the primary derogation requested by this stakeholder in the consultation relates to medical devices.

A further company (comment ID #7762) is found to design, manufacture and engineer pumps and pump systems for a wide variety of water applications based on information on its website. There, the company reports to control the full development and production process in a large factory in the Netherlands, enabling tailored solutions and customised pump designs. It reports research and development work using simulations, advanced calculations and prototypes to develop pump components that are efficient and reliable. While the submission does not explicitly detail PFAS-containing parts, fluoropolymers are generally known to be used in pumps, which are referred to as a specific example of machinery applications in ECHA (2025b).

Another company (comment ID #8647), also referred to in relation to sealing applications in Section 4.2.7, does not provide detailed information on applications for which it uses PFAS in its submission but argues that fluoropolymers should be fully exempted from the proposed REACH restriction. Information on the website indicates that the company is a global supplier of fluoroplastic products, including (among others) tapes and belts, corrosion-resistant cladding/coatings and customised parts (made of, e.g. PTFE, FEP, PFA and PVDF) that are produced in line with customer specifications. As such, it is clear that the company produces products falling within the scope of machinery applications. Conveyor belts are, for instance, referred to as a specific example of a product falling under machinery applications in ECHA (2025b).

Another company (comment IDs #8996/#8997) reports that it is a global manufacturer of process instrumentation and measurement

solutions. Those are also considered to fall within the scope of machinery applications. In its submission, the stakeholder explains that its process instrumentation is used across multiple sectors (e.g. power and energy, chemicals and petrochemicals, oil and gas, food and beverage, pharmaceuticals and biotechnology, water and wastewater, minerals and mining). The stakeholder reports an annual fluoropolymer use of 28 tonnes in its EU factories.

4.2.9 Other medical applications

The REACH restriction proposal includes six derogations of a duration of 13.5 years related to the applications that the submitters of the restriction proposal refer to as "other medical applications". For two of those derogations, production is considered to be prevalent in the Netherlands based on information submitted to the consultation, i.e. the derogations for:

- Fluoropolymer and PFPEs for the use in coated plungers in pre-filled syringes (Derogation 6v); and
- Fluoropolymer and PFPEs for the use in pre-filled injection pens and autoinjectors (Derogation 6w).

As shown in Table 4, for each derogation one company, in fact the same company, has been found to produce products that fall within the scope of the specific derogation.

Table 4 Number of stakeholders considered to produce products that fall within the scope of specific derogations relating to other medical applications

Associated paragraph number in ECHA (2025a)	**Derogation as proposed in ECHA (2025a)**	**Number of stakeholders considered to produce products that fall within the scope of the derogation based on consultation comments**
6v	Fluoropolymers and perfluoropolyethers for the use in: Coated plungers in pre-filled syringes	1
6w	Fluoropolymers and perfluoropolyethers for the use in: Pre-filled injection pens and autoinjectors	1

This company (comment ID #4062), which this report also refers to in relation to the derogation for invasive medical devices in Section 4.2.2, reports the use of PTFE for the production of internally lubricated engineering thermoplastic (ETP) compounds for medical devices. Specific examples of relevant medical devices provided by the company are minimally invasive and robotic surgery tools as well as autoinjectors for administering medicines, e.g. when treating severe allergic reactions. While surgical tools fall within the scope of the derogation for invasive medical devices, i.e. Derogation 6d (referred to in Section 4.2.2), the use of these compounds in autoinjectors is covered by Derogation 6w for injection pens and autoinjectors. While the company does not

specifically refer to the use of such compounds for coated plungers, the company notes that the use of internally lubricated thermoplastic compounds is widespread in medical devices. ECHA (2025b) furthermore highlights that fluoropolymer-coated plungers in pre-filled syringes are technically comparable to parts used in autoinjectors. As such, it is likely that produced compounds are also used for plungers. Information on the stakeholder's website indicates that the commenting entity (comment ID #4062) is part of a global corporate group that supplies PTFE-based products and engineering thermoplastic compounds worldwide. Within this group, manufacturing entities located in the Netherlands operate production facilities for such compounds. This supports the conclusion that production of such components for medical uses is prevalent in the Netherlands and may play a role in future identification and development of alternatives for these applications.

4.2.10 Technical textiles

The REACH restriction proposal includes six derogations relating to technical textiles that have a duration of 13.5 years. For one of those derogations, production is considered to be prevalent in the Netherlands based on information submitted to the consultation, i.e. the derogation for:

- HEPA (H 13-14) and ULPA (U 15-17) filters (according to EN 1822:2009) and in industrial uses for filtration and separation of air and other gases, excluding general (HVAC) ventilation (Derogation 5mm)

One company (comment ID #7535) reports the production of membrane modules for CO_2 removal in the natural gas industry. According to the submission, the company manufactures these membrane modules in the Netherlands and PFAS are used for coatings applied to the functional membrane.

The described membrane is fully integrated into a large cartridge element (with a length of approximately 1 meter and a diameter of 0.2 meter) and is covered by a glass-fibre cover.

4.3 Results of the analysis of the list of VNO-NCW members

As mentioned in Section 3, the list of members made available on the website of VNO-NCW was consulted to complement the analysis of comments submitted to the consultation.

To complement the overview developed in Section 4.2, the list of 141 members was screened with the aim to identify members that might be active in sectors whose activities relate to any of the 13.5-year derogations or time-unlimited derogations associated with those. For 12 members, which are all industry associations, a possible link was identified and further research on the respective websites conducted to confirm whether their members can be expected to produce products falling within the scope of relevant derogations. For six of those associations, only derogations covering applications for which production activities were already found to take place based on the analysis of consultation comments were identified as relevant. The members of the other six associations are considered to produce products falling under derogations for which no production activities were identified based on

the analysis of consultation comments. Those six associations are further described below. Some production activities of their members are considered to fall within the scope of 15 additional derogations.

One national association represents several hundred companies active in the production and supply of (corporate) clothing, carpets and other textile products (Modint, 2026a). Information on the website of the association highlights that some of its members produce clothing with protective functions for professional users (Modint, 2026b). As such, a share of its members is expected to produce products falling under the derogations for:

- PFAS for use in personal protective equipment (PPE) intended to protect users against risks as specified in Regulation (EU) 2016/425, Annex I (Derogation 5a);
- PFAS for use in personal protective equipment (PPE) specifically designed for armed forces, the maintenance of law and order and other emergency response workers (Derogation 5b); and
- Impregnation agents for re-impregnation of these articles (Derogation 5c).

In the medical sector, a national association reports on its website that it connects manufacturers of medical devices and technologies (Nefemed, 2026). While three companies using PFAS for the manufacture of products falling within the scope of invasive medical devices were identified based on consultation comments, further production activities relating to other types of derogated medical devices might therefore take place in the Netherlands, i.e.:

- Implantable medical devices (including medical implants and meshes) (Derogation 6c); and
- Packaging for medical devices (Derogation 6e).

Another national association represents suppliers of building materials. On its website, the association reports that the sector consists of more than 1 500 businesses. In the association itself, companies are reported to be represented by associations for sub-branches covering, for example, construction products made of rubber and plastic, cement and concrete, or metal, producers of sand or gravel and producers of insulation materials (NVTB, 2026). Given the strength of the sector, production activities relating to the derogations on construction products might take place in the Netherlands. Relevant derogations are the derogations for:

- Polymer additives used for fire safety purposes in construction products (Derogation 5z); and
- Fluoropolymer and PFPEs for the use in bridge and building bearings (Derogation 6o).

In addition, one national association reports to represent the vast majority (85%) of the Dutch paint and printing ink industry that consists of around 100 companies, including around 50 factories producing paints or printing inks (VVVF, 2026a). The association reports to provide support in relation to e.g. compliance with regulations, innovation and sustainability (VVVF, 2026b). It highlights that the Netherlands are an important player in this industry on the European level with the Dutch sector consisting of a few

multinational companies and numerous small- and medium-sized enterprises (VVVF, 2026a). As such, production activities relating to the four derogations covering toners and latex printing inks are considered to likely take place in the Netherlands. More specifically, this relates to the derogations for:

- Toners (Derogation 5cc), that aims to enable the development of PFAS-free toners, and the time-unlimited derogation on the continued supply of toners for use in existing equipment put on the market until 13.5 years after entry into force of a restriction (Derogation 5hh); and
- Latex printing inks (Derogation 5dd), that aims to enable the development of PFAS-free inks, and the time-unlimited derogation for the supply of latex printing inks for use in existing equipment put on the market until 13.5 years after entry into force of a restriction (Derogation 5ii).

Another national organisation represents the Dutch defence and security sector and connects relevant actors, i.e. companies, knowledge institutes and authorities (NIDV, 2026a; NIDV, 2026b). Around 300 businesses and knowledge institutes, ranging from small- and medium-sized enterprises to big organisations, are reported to be part of this organization (NIDV, 2026c). This includes both suppliers of products but also services relating to national and international security (NIDV, 2026b). According to the organisation, the group of relevant actors is diverse and ranges from manufacturing companies to specialists in the information and communication technology and logistics experts. Dutch companies and knowledge institutes in the defence sector are reported to be involved in all phases of the service life of products, with activities ranging from research and development activities to maintenance and support activities (NIDV, 2026c). As such, production activities relating to the proposed derogations for military applications are considered to take place in the Netherlands. Relevant derogations cover:

- Military applications in general (Derogation 5ll); and
- The use of fluoropolymers and PFPEs for the use in explosives in military applications (Derogation 6x).

Finally, one association represents 2 100 members, ranging from start-ups to small-and medium-sized and multinational companies, in the metal, electronics, electrical engineering and plastics industries (FME, 2026a). Production activities relating to numerous derogations for electronic components and semiconductors were identified based on consultation comments as noted in Section 4.2.4. Given the high number of members of the above industry association, further production activities relating to other applications of PFAS in electronics and semiconductors benefitting from proposed 13.5-year derogations might take place in the Netherlands, e.g.:

- Printed circuit boards and antennas (Derogation 5t)

Production activities relating to energy applications also occur in the Netherlands: A news release on the website reports the presentation of an award to a company at an association event. With the award, the company was praised for its innovations in relation to battery technology (FME, 2026b). As such, production activities relating to the derogation for binders and electrolytes in batteries (Derogation 5y) might also take place in the Netherlands.

5 Interpretation and discussion of the results

5.1 Conclusion on whether relevant production activities take place in the Netherlands

As noted in Section 4.2, applications for which production (partly) takes place in the Netherlands were identified in relation to 20 distinct derogations on the basis of stakeholder information shared during the consultation that took place in 2023. The complementary research based on the VNO-NCW members list identified 15 additional derogations in relation to which production activities might (and in some cases, are likely) to take place in the Netherlands. As such, it is clear that there are numerous applications of PFAS, for which suitable alternatives have not been identified and developed yet, for which the production of products (mixtures or articles) takes place in the Netherlands. Table 5 provides a summary of the derogations for which production activities are found to take place (and in some cases, might take place), together with an indication of the strand of evidence based on which the derogation has been identified as relevant.

Table 5 Overview of proposed 13.5-year derogations (and associated time-unlimited derogations) for which production activities are found to take place (and in some cases, might take place) in the Netherlands

Associated paragraph number in ECHA (2025a)	**Derogation as proposed in ECHA (2025a)**	**Associated use sector as defined by five countries that developed the proposal**	**Identified as relevant based on [consultation comments]/ [VNO-NCW members list]**	**If identified based on VNO-NCW members list: Reason for identifying derogation as relevant**
5a	Personal protective equipment (PPE) intended to protect users against risks as specified in Regulation (EU) 2016/425, Annex I, until 13.5 years after entry into force	Textile, upholstery, leather, apparel and carpets (referred to as "TULAC")	VNO-NCW members list	A national association represents several hundred Dutch companies producing clothing, carpets and other textile products. There is evidence that some members specifically make protective clothing for professional users. This indicates that a portion of these companies likely produce textile products that fall within the scope of these respective derogations.
5b	Personal protective equipment (PPE) specifically designed for armed forces, the maintenance of law and order and other emergency response workers, until 13.5 years after entry into force			
5c	Impregnation agents for re-impregnation of articles referred to in paragraph 5b and 5c until 13.5 years after entry into force			
5f	Refrigerants in laboratory test and measurement equipment until 13.5 years after entry into force	Applications of fluorinated gases	Consultation comments (1 stakeholder)	Not applicable
5g	Refrigerants in refrigerated centrifuges until 13.5 years after entry into force	Applications of fluorinated gases	Consultation comments (1 stakeholder)	Not applicable

Associated paragraph number in ECHA (2025a)	Derogation as proposed in ECHA (2025a)	Associated use sector as defined by five countries that developed the proposal	Identified as relevant based on [consultation comments]/ [VNO-NCW members list]	If identified based on VNO-NCW members list: Reason for identifying derogation as relevant
5k	Fluorinated gases used as clean fire suppressing agents where current alternatives damage the assets to be protected or pose a risk to human health until 13.5 years after entry into force	Applications of fluorinated gases	Consultation comments (1 stakeholder)	Not applicable
5n	Refrigerants, clean fire-suppressing agents and insulation gases for maintenance and refilling of existing HVACR[10], fire-suppressing and switchgear equipment put on the market before 18 months (or placed on the market after 18 months after entry into force based on an applicable derogation)	Applications of fluorinated gases	Consultation comments (3 stakeholders)	Not applicable
5q	Refrigerants in mobile air conditioning systems and heat pump systems in […] (ii) all other vehicles until 13.5 years after entry into force	Transport	Consultation comments (2 stakeholders)	Not applicable

[10] HVACR stands for 'Heating, ventilation, air conditioning and refrigeration'.

Associated paragraph number in ECHA (2025a)	Derogation as proposed in ECHA (2025a)	Associated use sector as defined by five countries that developed the proposal	Identified as relevant based on [consultation comments]/ [VNO-NCW members list]	If identified based on VNO-NCW members list: Reason for identifying derogation as relevant
5t	Printed circuit boards and antennas for 13.5 years after entry into force	Electronics and semiconductors	VNO-NCW members list	A large Dutch industry association (with 2 100 member companies) represents the metal, electronics, electrical engineering and plastics industries. Given the high number of members and focus on electronics, production activities beyond the activities relating to application of PFAS identified based on consultation comments might take place.
5u	Photonics for 13.5 years after entry into force	Electronics and semiconductors	Consultation comments (1 stakeholder)	Not applicable
5w	Semiconductor manufacturing until 13.5 year after entry into force	Electronics and semiconductors	Consultation comments (3 stakeholders)	Not applicable
5x	Coatings and films of electronic components (excluding displays and lenses) for 13.5 years after entry into force	Electronics and semiconductors	Consultation comments (2 stakeholders)	Not applicable
5y	Binders and electrolytes in batteries until 13.5 years after entry into force	Energy	VNO-NCW members list	The website of the large industry association that represents the metal, electronics, electrical engineering and plastics industries provides specific evidence pointing to activities relating to battery technology. Production activities relating to the derogation for binders and electrolytes might therefore also take place.

Associated paragraph number in ECHA (2025a)	Derogation as proposed in ECHA (2025a)	Associated use sector as defined by five countries that developed the proposal	Identified as relevant based on [consultation comments]/ [VNO-NCW members list]	If identified based on VNO-NCW members list: Reason for identifying derogation as relevant
5z	Polymer additives used for fire safety purposes in construction products until 13.5 years after entry into force	Construction products	VNO-NCW members list	The Dutch building materials sector is large and diverse (over 1 500 businesses across multiple sub-branches, including products made of rubber and plastics). While there is no explicit evidence, the strength of the sector suggests that relevant production activities might take place in the Netherlands.
5cc	Toners until 13.5 years after entry into force	Printing applications	VNO-NCW members list	The Netherlands hosts a large and significant paint and printing ink industry (at least 50 factories producing paints or printing inks). This makes it likely that production activities falling under the four derogations for toners and latex printing inks actually take place in the Netherlands.
5hh	Toners for use in existing equipment put on the market until 13.5 years after entry into force			
5dd	Latex printing inks until 13.5 years after entry into force			
5ii	Latex printing inks for use in existing equipment put on the market until 13.5 years after entry into force			
5ff	Kinetic printing components until 13.5 years after entry into force	Printing applications	Consultation comments (1 stakeholder)	Not applicable

Associated paragraph number in ECHA (2025a)	Derogation as proposed in ECHA (2025a)	Associated use sector as defined by five countries that developed the proposal	Identified as relevant based on [consultation comments]/ [VNO-NCW members list]	If identified based on VNO-NCW members list: Reason for identifying derogation as relevant
5II	Military applications until 13.5 years after entry into force	Military applications	VNO-NCW members list	The Dutch defence and security sector is large and diverse (around 300 companies and institutes involved in all product life-cycle phases, from research and development to maintenance, and service provision), making it likely that production activities related to military applications covered by the proposed derogation take place in the Netherlands.
5mm	HEPA (H 13-14) and ULPA (U 15-17) filters (according to EN 1822:2009) and in industrial uses for filtration and separation of air and other gases for 13.5 years after entry into force, excluding general (HVAC[11]) ventilation	Technical textiles	Consultation comments (1 stakeholder)	Not applicable

[11] 'HVAC' stands for heating, ventilation and air conditioning.

Associated paragraph number in ECHA (2025a)	Derogation as proposed in ECHA (2025a)	Associated use sector as defined by five countries that developed the proposal	Identified as relevant based on [consultation comments]/ [VNO-NCW members list]	If identified based on VNO-NCW members list: Reason for identifying derogation as relevant
6c	Fluoropolymers and perfluoropolyethers for the use in: Implantable medical devices (including medical implants and meshes) until 13.5 years after entry into force	Medical devices	VNO-NCW members list	A national association connects manufacturers of medical devices and technologies in the Netherlands, and at least three companies are already known to use PFAS for invasive medical devices based on consultation comments. Additional production activities for other derogated PFAS-containing medical devices might therefore take place in the Netherlands.
6d	Fluoropolymers and perfluoropolyethers for the use in: Invasive medical devices (e.g. tubes and catheters) until 13.5 years after entry into force	Medical devices	Consultation comments (3 stakeholders)	Not applicable
6e	Fluoropolymers and perfluoropolyethers for the use in: Packaging for medical devices until 13.5 years after entry into force	Medical devices	VNO-NCW members list	A national association connects manufacturers of medical devices and technologies in the Netherlands, and at least three companies are already known to use PFAS for invasive medical devices based on consultation comments. Additional production activities relating to packaging for medical devices can therefore not be ruled out.

Associated paragraph number in ECHA (2025a)	Derogation as proposed in ECHA (2025a)	Associated use sector as defined by five countries that developed the proposal	Identified as relevant based on [consultation comments]/ [VNO-NCW members list]	If identified based on VNO-NCW members list: Reason for identifying derogation as relevant
6f	Fluoropolymers and perfluoropolyethers for the use in: (i) vehicle systems, components or separate technical units that are subject to EU vehicle type approval, where the type approval was obtained within 13.5 years after entry into force[12]; or (ii) systems, components or separate technical units in vehicles that are not within the scope of paragraph a, where the use of fluoropolymers or perfluoropolyethers are strictly necessary for safety or environmental performance of those vehicles until 13.5 years after entry into force[13]	Transport	Consultation comments (2 stakeholders)	Not applicable
6h	Fluoropolymers and perfluoropolyethers for the use in: Wires and cables (including connectors) for 13.5 years after entry into force	Electronics and semiconductors	Consultation comments (1 stakeholder)	Not applicable

[12] Excluding 'sealing applications', batteries and fuel cells, lubricants, electronic and electrical systems, HVACR, technical textiles. Relevant EU vehicle type approvals are: e.g., motor vehicles within the scope of Regulation (EU) 2018/858, (EU) 2019/2144 or Directive 2007/46/EC, agricultural and forestry vehicles within the scope of Regulation (EU) 167/2013, aircraft within the scope of Regulation (EU) 2018/1139 or (EU) 748/2012, watercraft within the scope of Directive 2013/53/EU or 2009/45/EC, and rail vehicles within the scope of Regulation (EU) 2016/797 or Directive (EU) 2016/798

[13] Excluding 'sealing applications', batteries and fuel cells, lubricants, electronic and electrical systems, HVACR, technical textiles. Examples of safety or environmental performance are: e.g., braking, restraint, lighting/signalling, driver assistance systems, emission control.

Associated paragraph number in ECHA (2025a)	Derogation as proposed in ECHA (2025a)	Associated use sector as defined by five countries that developed the proposal	Identified as relevant based on [consultation comments]/ [VNO-NCW members list]	If identified based on VNO-NCW members list: Reason for identifying derogation as relevant
6i	Fluoropolymers and perfluoropolyethers for the use in: Insulation material of electronic components (excluding wires, cables and connectors) for 13.5 years after entry into force	Electronics and semiconductors	Consultation comments (1 stakeholder)	Not applicable
6j	Fluoropolymers and perfluoropolyethers for the use as: Anti-drip agent in plastics of electronic components for 13.5 years after entry into force	Electronics and semiconductors	Consultation comments (1 stakeholder)	Not applicable
6k	Fluoropolymers and perfluoropolyethers for the use in: Fuel cells and electrolysers until 13.5 years after entry into force	Energy	Consultation comments (1 stakeholder)	Not applicable
6o	Fluoropolymers and perfluoropolyethers for the use in: Bridge and building bearings until 13.5 years after entry into force	Construction products	VNO-NCW members list	The Dutch building materials sector is large and diverse (over 1 500 businesses across multiple sub-branches, including products made of rubber and plastics, and metal). While there is no explicit evidence, the strength of the sector suggests that relevant production activities might take place in the Netherlands.

Associated paragraph number in ECHA (2025a)	Derogation as proposed in ECHA (2025a)	Associated use sector as defined by five countries that developed the proposal	Identified as relevant based on [consultation comments]/ [VNO-NCW members list]	If identified based on VNO-NCW members list: Reason for identifying derogation as relevant
6p	Fluoropolymers and perfluoropolyethers for the use in: Sealing applications in industrial uses until 13.5 years after entry into force	Sealing applications	Consultation comments (9 stakeholders)	Not applicable
6q	Fluoropolymers and perfluoropolyethers for the use in: Machinery applications in industrial uses until 13.5 years after entry into force	Machinery applications	Consultation comments (5 stakeholders)	Not applicable
6v	Fluoropolymers and perfluoropolyethers for the use in: Coated plungers in pre-filled syringes until 13.5 years after entry into force	Other medical applications	Consultation comments (1 stakeholder)	Not applicable
6w	Fluoropolymers and perfluoropolyethers for the use in: Pre-filled injection pens and autoinjectors until 13.5 years after entry into force	Other medical applications	Consultation comments (1 stakeholder)	Not applicable
6x	Fluoropolymers and perfluoropolyethers for the use in: Explosives in military applications until 13.5 years after entry into force	Explosives	VNO-NCW members list	The sector includes manufacturing companies and suppliers of defence-related products, implying that production activities involving explosives and explosive-related technologies might be present in the Netherlands.

As shown in Table 5, per derogation, between one and nine stakeholders were found to produce products falling within the scope of the respective derogation based on consultation comments. With nine companies with relevant production activities, the highest number of relevant companies was identified with respect to the derogation for sealing applications in industrial uses, followed by the derogation for machinery applications in industrial uses. Five companies are considered to produce products falling within the scope of machinery applications. For all other derogations, at most three stakeholders with relevant production activities were identified.

Eight stakeholders are considered to produce products relating to more than one derogation. Overall, 26 stakeholders are considered to produce products falling within the scope of one or several of the 13.5-year derogations (or time-unlimited derogations associated with any of those).

The complementary research based on the VNO-NCW members list identified eight additional derogations in relation to which production activities are likely to occur, i.e.:

- Derogations 5a to 5c relating to personal protective equipment;
- Derogations 5cc and 5hh relating to toners;
- Derogations 5dd and 5ii relating to latex printing inks; and
- Derogation 5ll relating to military applications in general.

With respect to the other seven derogations, relevant production activities might occur but this is, as explained in Table 5, less certain given the less explicit evidence available.

As such, these results highlight applications where Dutch production and long derogations coincide, and where innovation is required. Industrial activities are expected to take place in relation to at least 28 relevant derogation, and potentially seven more. Those applications could benefit from a targeted subsidy scheme to support innovation and the development of alternatives to PFAS.

5.2 Discussion on uncertainties

In relation to the results of the analysis, several uncertainties (beyond the uncertainties relating to industrial activities falling within the scope of the seven derogations identified based on the VNO-NCW members list) remain. Overall, the identified number of applications for which production activities are considered to take place might be underestimated. Some relevant applications for which production takes place in the Netherlands may not have been identified or may be only partially captured. This is due to several reasons:

Firstly, the process of linking consultation comments to specific derogations is not always straightforward. Some comments clearly describe what PFAS is used for and explicitly state which derogation proposed in the dossier published in 2023 (which was subsequently updated based on consultation comments) the use relates to. Others are much less explicit or do not contain enough publicly available information to be directly linked to a particular derogation. As noted in

Section 4.1, for 13 comments it was, in fact, not possible to clearly determine whether the described applications fall within the scope of a 13.5-year derogation (or any time-unlimited derogation associated with these) due to insufficiently detailed descriptions.

A second source of uncertainty concerns confidential submissions. The confidential (parts of) 56 submissions (around 43% of submissions) were, as noted in Section 4.1, not taken into consideration for the analysis. Those comments may nevertheless contain indications of activities in the Netherlands that are covered by proposed derogations.

Thirdly, there are uncertainties related to the list of VNO-NCW members. As noted in Section 2, VNO-NCW reports to represent businesses in the Netherlands that account for 90 percent of employment in the private sector. As such, the list of VNO-NCW members covers a very large share but not all business activities that take place in the Netherlands. This implies that some sectors might not be represented in the dataset, and their potential reliance on specific derogations may not have been captured.

Overall, additional applications might therefore benefit from a targeted subsidy scheme to support PFAS-free innovation and the development of alternatives to PFAS.

In addition, it is important to note that for two 13.5-year derogations in relation to which production activities are considered to take place in the Netherlands, i.e. the derogations for:

- Toners (Derogation 5cc); and
- HEPA (H 13-14) and ULPA (U 15-17) filters (according to EN 1822:2009) and in industrial uses for filtration and separation of air and other gases, excluding general (HVAC) ventilation (Derogation 5mm);

the available information suggests that research and development processes are slightly more advanced than for other derogations.

With respect to toners, ECHA (2025b) reports that stakeholders contested the feasibility of silicone and styrene acrylate, which are already used in conjunction with PFAS, as alternatives. On the basis of available evidence, the five countries that prepared the REACH restriction proposal conclude that the evidence suggests that drop-in alternatives for toners do not exist but that adjustments to printers, e.g. their software, seem to be possible and could enable the use of alternatives. In relation to filters for the filtration and separation of air and other gases, ECHA (2025b) highlights that alternatives to PFAS are already widely used for general ventilation purposes. In contrast, possible alternatives for other filtration and separation processes for air and other gases, such as glass fibre and polyether ether ketone (PEEK) membranes, are not ready for use yet. More time (beyond 6.5 years) is reported to be required for further research, development activities and certification. As such, for toners and filters for the filtration and separation of air and other gases, suitable substances that could be used as an alternative have already been identified but more work is

needed until alternative products can be offered on the market. This distinguishes these two derogations from other 13.5-year derogations.

As explained in Section 1.2, the five countries that prepared the REACH restriction proposal suggest a derogation of 13.5 years when no suitable alternative has been identified so far, but also when available evidence suggests that implementation of the identified alternative cannot be achieved within the shorter derogation timeframe. In the former situation, investing in research and development may be more financially burdensome and, as mentioned in Section 3.1, risky, given the limited certainty regarding successful substitution. In the latter, companies need (as for toners and the aforementioned filters) time to, e.g. further develop the product or arrange certification. As mentioned in relation to 6.5-year derogations in Section 3.1, companies involved in such activities generally face less uncertainty as it is more likely that the company will end up supplying profitable products on the market in the near future. Required investments associated with such activities are therefore less risk-prone. This makes them, as noted in Section 3.1, attractive for investors and suitable for bank loans. Financial barriers faced by companies are therefore expected to be lower. Temporary public financial support is therefore, as highlighted in Section 3.1, not deemed to be needed for applications falling within the scope of derogations of a duration of 6.5 years and also not advisable. Given that more concrete ideas on possible alternatives also exist for toners and filters for the filtration and separation of air and other gases, it cannot be ruled out that it is easier for relevant Dutch companies to attract funding from investors or via bank loans. In relation to the development of alternatives to PFAS-containing membranes for carbon dioxide removal applications in the natural gas industry, the relevant company (comment ID #7535) notes that feasibility studies for alternatives are in progress. The stakeholder explains in the submission that the development of a PFAS-free alternative shall take "at least 5 years, maybe 10" and requests a derogation of a total duration of 13.5 years. The company reports that a lot of resources will be needed to identify an alternative, develop a prototype, complete customer evaluation processes and develop the commercial product. The broad time range reported indicates uncertainties even for a case with a slightly more advanced research and development process. It furthermore illustrates how technically demanding and uncertain substitution can be in practice in some cases. When setting up a subsidy scheme and designing eligibility requirement, it is therefore advisable to give careful consideration to the stage of the research and development process that the applicant is at and the level of uncertainty faced. It is advisable to only provide public funding where required investments are very risk-prone and make it challenging to access funding through other routes.

5.3 Conclusion on whether a subsidy scheme would be of benefit to society

As noted in Section 5.1, numerous applications where Dutch production and long derogations coincide, and where innovation is required, have been identified. The analysis in this report, furthermore, highlights that

a targeted subsidy scheme for research and development activities could be of benefit to society:
Firstly, such a scheme has the potential to stimulate innovation in areas where substitution is still technically challenging and where Dutch production activities take place. As shown in Section 4.1, the shortlisted applications identified in the analysis are based on comments submitted by upstream actors (manufacturers and formulators), but downstream users also contributed a substantial number of comments (25 comments; ~19% of all comments submitted by Dutch entities).

This mix is informative. Upstream actors focus on the technical feasibility of substitution and the complexity of adjusting production processes, while downstream users emphasise the importance of secure and predictable access to PFAS-free alternatives. The downstream comments highlight how important it is for Dutch downstream users that reliable solutions are found. They depend on PFAS-containing products as inputs in critical processes, but also face regulatory and potentially reputational and liability risks from continued PFAS use.

Subsidies for research and development activities (aimed at upstream innovation) could therefore indirectly benefit downstream users by:

- Increasing the likelihood that robust alternatives to PFAS will be developed within predictable timeframes; and
- Enhancing certainty by potentially demonstrating a credible pathway towards substitution and compliance with future restrictions.

Such certainty is a key driver for investment decisions. When companies can reasonably expect that alternatives to PFAS will be available and, where relevant, approved within a certain timeframe, they are more inclined to invest in e.g. the modernisation of production sites, process adaptations and training. Conversely, prolonged uncertainty can delay or reduce investments and may even trigger relocation or downsizing. In the worst case, this can lead to full reliance on supply from outside the European Economic Area, which captures the European Union Member States and Iceland, Liechtenstein and Norway. One stakeholder (comment ID #7270) providing information about a company that enriches natural uranium used in commercial nuclear power plants, for example, indicates that a full ban on PFAS would mean a full reliance on Russian supply of enriched heavy stable isotopes which would not, according to the comment, cover the whole demand.

Secondly, the potential positive impact on the wider economy is substantial. Targeted subsidies for research and development activities could generate economic benefits by supporting companies in developing and implementing alternatives, thereby helping to safeguard existing jobs in sectors where PFAS currently play a critical role and potentially creating new high-skilled positions in research and development and in the production of PFAS-free technologies. A stable and innovative industrial base, that such subsidies might positively contribute to, leads to increased tax revenues, which can be used to e.g. finance public services such as healthcare and pensions. As noted in Section 2, increased growth (compared to current predictions) is

required to have sufficient funds for funding these services and to fund required investments in defence and the energy transition. As such, subsidies in support of innovation to develop alternatives to PFAS could be beneficial to the welfare of the Dutch population.

By increasing the likelihood for the successful and timely development of alternatives to PFAS (by helping companies to overcome financial barriers), subsidies furthermore decrease the likelihood for extensions of proposed time-limited derogations. Subsidies thereby have the potential to contribute to protecting the health of the Dutch population by limiting future PFAS emissions. In this way, subsidies could also indirectly benefit Dutch water companies and other actors involved in drinking water, surface water and groundwater treatment. As highlighted in the appendix, several stakeholders highlighted the benefits of a reduction in the use of PFAS for water quality and treatment costs in their submissions to the consultation.

6 Suggestions for increasing likelihood of successful innovation

As highlighted in Section 5.1, there are numerous applications of PFAS for which production takes place in the Netherlands that could benefit from a targeted subsidy scheme to support innovation and the development of alternatives to PFAS by helping companies to overcome financial barriers.

PFAS are widely used in products - amongst other reasons - because of their unique ability to remain stable under harsh conditions. Their persistence - resistance to high temperatures, acids, and other chemically aggressive environments - underpins their effectiveness and long service life in many applications. However, for uses where such demanding requirements are crucial, there is a risk that alternatives to PFAS may also need to possess similar persistent properties, potentially leading to similar environmental concerns that make PFAS problematic in the first place.

Therefore, the development of alternatives should not only focus on matching the performance of PFAS or meeting the minimal performance requirements, which in some cases are lower than the performance provided by PFAS, but also on ensuring that new chemicals minimize hazards and environmental footprints throughout their entire life cycle. Applying Safe and Sustainable by Design (SSbD) principles can help ensure that new solutions are both effective and safe for humans and the environment, avoiding the unintended consequences of regrettable substitution.

6.1 SSbD as an innovation management approach

Safe and Sustainable by Design (SSbD) provides a systemic approach to steer innovation towards solutions that are inherently safer and more sustainable throughout their life cycle. Rather than treating safety and sustainability as downstream checks, SSbD aims to integrate these considerations from the earliest stages of problem definition, concept development and design, and to align them with wider societal objectives and innovation processes. Therefore, SSbD is more than the application of a set of design principles or toolboxes. It should be understood as an integral part of innovation management, encompassing several mutually reinforcing elements:

1. Mindset and problem framing:
   SSbD requires a mindset that goes beyond regulatory compliance and addresses societal challenges, aiming to tackle underlying causes rather than merely addressing symptoms. In the case of PFAS, this means not only replacing individual substances, but for example questioning the underlying service need (e.g. water repellence, chemical resistance) and its societal relevance.
2. Design thinking and system-level solutions:
   SSbD calls for design thinking that deliberately broadens both the problem space and the solution space. Radical solutions are often

beyond the reach of individual organisations, but can be realised collectively. For instance, instead of focusing narrowly on a one to one chemical substitute, the challenge can be reframed towards strategies for creating circular material and product loops.

3. Information gathering, analysis and assessment:
   A core component of SSbD is the systematic generation and integration of information in order to apply SSbD design principles in a transparent and evidence based manner. The Joint Research Centre (JRC) has developed an SSbD framework for research and innovation that supports decision making during the early stages of the innovation process. In short, this framework requires that safety and sustainability are assessed from the outset by combining established hazard and risk assessment approaches for human health and the environment (Steps 1–3) with life cycle based sustainability assessment (Step 4).
4. Stakeholder engagement throughout the value chain:
   SSbD approaches emphasise active engagement of relevant stakeholders - value chain actors, academic and professional communities, regulators, and civil society - in the innovation journey. Such engagement helps to articulate functional requirements, identify trade-offs, and anticipate system level implications of alternatives, which is essential to prevent regrettable substitution.
5. Strategies for stepwise and continuous improvement:
   SSbD also requires strategies for iterative and continuous improvement. Early alternatives may not be optimal, but can be developed along improvement trajectories, provided that there is clarity on long-term sustainability goals, monitoring of impacts, and mechanisms for adapting designs, processes and business models over time.

6.2 Embedding SSbD in research and development funding schemes

SSbD principles are increasingly being integrated as requirements in funding schemes, such as the Horizon Europe programmes. Applicants are required to demonstrate that newly developed chemicals or materials minimize hazards and environmental footprints throughout their entire life cycle, for example by using available SSbD toolboxes and by providing periodic reporting.

However, the effectiveness of SSbD in preventing regrettable substitution depends not only on the design of individual research and development projects, but also on how these projects are embedded in broader innovation “ecosystems”, including the extent to which they stimulate life-cycle thinking and structured involvement of value-chain stakeholders. In line with the growing insight that research and innovation should not be approached as a linear process from knowledge to application, but rather as a collective effort geared towards societal challenges, a subsidy scheme for research and development activities should therefore actively support the creation of trusted environments in which stakeholders from across the value chain can jointly engage in the innovation process.

In addition, the Scientific Council for Government Policy (WRR) report on mission-oriented innovation policy indicate that subsidies for research and development activities have a tendency to reinforce existing interests and, without targeted guidance, often yield limited transformative impact (WRR, 2023). Making SSbD approaches mandatory in research and development programmes can help counteract this tendency, but only if appropriate support structures are in place, together with mechanisms of reward and sanctioning that enable the effective implementation of the SSbD elements outlined above. This implies that funders should actively manage the balance between creativity and autonomy on the one hand, and directionality and accountability on the other. This requires adequate support structures and learning oriented governance, for example by providing methodological support and capacity building for SSbD, and by asking projects to work with hypothesis based approaches that facilitate reflection, course correction and stakeholder involvement throughout the innovation process.

Based on these considerations the following recommendations are given:

1. Include the use of SSbD approaches as a mandatory requirement in research and development funding schemes for PFAS alternatives;
2. Encourage life cycle thinking and involvement of stakeholders throughout the value chain by creating trusted environments in which cross sector collaboration is facilitated and supported;
3. Include support structures and steering mechanisms within research and development programmes.

7 Overall conclusion and next steps

Taken together, the evidence from consultation comments and trade association information suggests that a carefully designed subsidy scheme has the potential to simultaneously:

- Advance substitution in various applications for which production is prevalent in the Netherlands;
- Reduce business risks (such as disruptions to their operations) and uncertainties for both producers and downstream users;
- Strengthen the long-term competitiveness and resilience of the Dutch economy;
- Positively contribute to the welfare and health of the Dutch population; and
- Help to limit water treatment costs.

As such, the design of a suitable subsidy scheme that:

- Gives careful consideration in the eligibility requirements to the stage of the research and development process that the applicant is at, the level of uncertainty faced and the resulting impact on access to financial means (see Section 5.2);
- Includes the use of SSbD approaches as a mandatory requirement (see Section 6.2);
- Encourages life cycle thinking and involvement of stakeholders throughout the value chain (see Section 6.2); and
- Includes support structures and steering mechanisms within research and development programmes (see Section 6.2);

should be considered. The decision on whether to implement a subsidy scheme for specific sectors ultimately requires a comparison of the societal costs and benefits: Subsidies should only be granted to sectors for which the expected societal benefits exceed the costs.

When designing such a scheme, careful consideration needs to be given to possible differences between the list of derogations proposed by the five countries that prepared the REACH restriction proposal and the final list of derogations to be legally implemented by the European Commission in the future. The European Commission prepares this final version based on the final proposal made by the Netherlands, Germany, Sweden, Norway and Denmark and the independent evaluation of the proposal and evidence submitted during the consultation by ECHA's Committee for Risk Assessment (RAC) and Committee for Socio-Economic Analysis (SEAC). Based on this evaluation, which has yet to be finalised, the list of derogations might change. At this stage, consideration can also be given to the usefulness of the creation of a (part of) the subsidy scheme at a different geographical level.

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Appendix 1 Reasons for classifying consultation comments as irrelevant

Table A.1 Details on the number and content of consultation comments deemed irrelevant in the context of potential national subsidies for research and development activities

Does this comment cover an application or applications, for which production is prevalent in the Netherlands, that benefit from a derogation of a duration of 13.5 years, or time-unlimited derogations associated with those?	**Number of comments for which this conclusion has been drawn**	**Details**
Yes	26	These comments cover one or several applications of PFAS benefitting from a relevant derogation for which the production of products (mixtures or articles) is taking place in the Netherlands. In the restriction proposal, derogations of a duration of 13.5 years are – as explained in Figure 1 – proposed for applications for which: • No suitable alternative has been identified; or • Implementation of the identified alternative cannot be achieved within the shorter derogation timeframe. This is often due to very long qualification cycles or demanding regulatory/certification requirements. As these submitters produce PFAS-containing articles/mixtures benefitting from derogations of 13.5 years (or a time-unlimited derogation associated with any of those), they are potential beneficiaries of subsidies to develop, test and implement alternatives to PFAS.
Yes, but the comment is not linked to a specific derogation, as the submitter also provided information on comparable applications (benefitting from the same derogation) in other comment(s)	19	Those overlapping inputs were considered together in the assessment to avoid double-counting.

Does this comment cover an application or applications, for which production is prevalent in the Netherlands, that benefit from a derogation of a duration of 13.5 years, or time-unlimited derogations associated with those?	Number of comments for which this conclusion has been drawn	Details
No, as the submitter is/refers to a downstream user	25	Organisations submitting these comments are not deemed to be potential direct beneficiaries of subsidies because the submitters are downstream users of PFAS-based products/components, not manufacturers. The comments highlight that there are numerous Dutch companies and other types of users that rely on PFAS-based materials in their operations or products. Specifically, the comments describe the following types of downstream users: • Comment IDs #3994, #4116, #7903, #9368 and #9397 refer to the use of fluoropolymers and other PFAS-based materials in seals, gaskets, hose/tube linings and similar components within chemical, ozone and other industrial processes. • Comment IDs #7270, #7789, #8091 and #9139 describe PFAS-containing parts in uranium enrichment equipment, mass-flow and pressure meters, chemically resistant construction materials, and high-voltage equipment in the energy transport network. • Comment ID#8742 concerns the use of fluoropolymers in the manufacture of active pharmaceutical ingredients. • Comment ID #7507 describes PFAS-containing components in industrial pumps and valves, whereas comment ID #9169 refers to manufacturing equipment containing PFAS (e.g. seals, gaskets, coatings). • Comment ID #9077 concerns PFAS-derivative materials in parts of agricultural machinery, where PFAS are, according to the stakeholder, essential for endurance, technical performance and compliance with food- and safety-related standards. • Comment IDs #4614 and #6143 relate to PFAS in thread-sealing tapes, lubricants and fluorinated gases used as foam blowing agents in in-situ applications. • Comment ID #9463 relates to PFAS used as anti-drip agents in polymer materials to prevent flame spread. Similarly, comment ID #7705 refers to PTFE used as an additive in advanced polymer plastic products sold as pellets, which are then used to produce safety-critical vehicle components (e.g. housings for electronic control units, antennas, emergency call buttons).

Does this comment cover an application or applications, for which production is prevalent in the Netherlands, that benefit from a derogation of a duration of 13.5 years, or time-unlimited derogations associated with those?	Number of comments for which this conclusion has been drawn	Details
		• Comment ID #8364 describes PFAS-containing materials in transmission system and electrical equipment (e.g. insulation, coatings, components). • Comment ID #9088 relates to PFAS-containing membranes/components in electrolysis equipment used to produce green hydrogen from water and renewable electricity. • Comment #9525 refers to PFAS-containing components in transport electronics (Heavy Vehicle and Off-Road (HVOR)/automotive sensors, electrical protection devices) and electronic devices in the heating, ventilation, air conditioning and refrigeration (HVACR) sector. These comments therefore illustrate a wide range of downstream uses of PFAS-containing mixtures and articles (e.g. seals, gaskets, linings, membranes, coatings, electronic components, machinery) that are relevant to the PFAS restriction. They do, however, not describe companies which are expected to lead in the development of alternatives to the use of PFAS in these mixtures and articles. For this, these companies are expected to be reliant on upstream suppliers.
No, as key production/research and development sites are located outside of the Netherlands	2	As the core PFAS-related production/research and development activities are taking place abroad, the activities described fall outside the geographical scope of potential national subsidies. For instance, one company (comment ID #4402) has, according to the provided information and information on the website, no main production plants or development centres in the Netherlands. Similarly, another company (comment ID #8520) is headquartered in Germany, with design and manufacturing facilities in the USA, Ireland, Great Britain, India and Italy, and only a representative presence in the Netherlands. As such, described applications of PFAS are not taken into account.
No, there is no relevant information on industrial activities in the Netherlands	4	The comments do not provide explicit evidence of PFAS-related industrial activities located in the Netherlands. For instance, one company (comment ID #7274) mentions production facilities outside of the European Union (i.e. in the United Kingdom, the United States, Mexico and Japan) and no operations in the Netherlands.

Does this comment cover an application or applications, for which production is prevalent in the Netherlands, that benefit from a derogation of a duration of 13.5 years, or time-unlimited derogations associated with those?	Number of comments for which this conclusion has been drawn	Details
No, the described application does not benefit from a derogation of 13.5 years or a time-unlimited derogation associated with any of those	4	The applications described in the comments do not fall within the scope of derogations with a duration of 13.5 years or the scope of time-unlimited derogations associated with those: • For example, one company (comment ID #4600) describes the use of a PFAS as polymer processing aid for the manufacture of "metallocene linear low density polyethylene (mLLDPE) granules, including LLDPE films for packaging applications". The described use is considered to fall within the scope of derogation 6a that covers polymer processing aids used in flexible plastic film extrusion for food and non-food applications. The proposed derogation has a duration of 6.5 years. • Similarly, one company (comment ID #6668) describes the use of PFAS for the production of backsheets of photovoltaic modules. This application falls within the scope of derogation 6n that covers front- and backsheets in photovoltaic cells. This proposed derogation also only has a duration of 6.5 years. • Another company (comment ID #7685) covers the use of PFAS as pigments. In relation to pigments and colourants, the five countries that submitted the restriction proposal note that provided evidence on alternatives is limited. One stakeholder stated that no adequate alternatives exist without providing further details. The submitters of the proposal note that "alternative yellow pigments are likely to be available, but their colour and physical properties might be slightly different, with a corresponding loss in functionality" (ECHA, 2025b, p.843). Given that there is only weak evidence for the unavailability of alternatives, no derogation is proposed (ECHA, 2025b). • Another company (comment ID #8725) provides information relating to the use of PFAS in the synthesis of active pharmaceutical ingredients. This application falls within the scope of the time-unlimited exemption for active substances in human and veterinary medicinal products (paragraph 4c). Any starting materials and intermediates in the manufacture of PFAS for this use as well as the production of PFAS-containing mixtures or articles in the upstream supply chain of this use are also covered by a time-unlimited exemption (via paragraphs 4g and 4h).

Does this comment cover an application or applications, for which production is prevalent in the Netherlands, that benefit from a derogation of a duration of 13.5 years, or time-unlimited derogations associated with those?	Number of comments for which this conclusion has been drawn	Details
No, as the submitter is a non-industry stakeholder	23	The comments do not provide information on applications of PFAS for which production is prevalent in the Netherlands as the submitters are non-industry stakeholders: Comment IDs #5896, #6012, #6665, #9399 and #9558 were submitted by individual citizens. Comment IDs #7523, #7549, #7555, #7563, #7564, #8044, #8167, #8230, #8248, #8370, #9519 and #9561 were submitted by regional or local authorities (e.g. municipalities) expressing concern about PFAS emissions—particularly closely located to chemical industrial sites—and supporting a broad or complete ban on PFAS to protect the environment and public health. Comment IDs #7687 and #8377 originate from international organisations promoting hygienic engineering for food manufacture and the safe use of medical devices, calling for detailed evaluation of PFAS used in these applications. Comment IDs #7928 and #8313 were submitted by national and international NGOs advocating for a robust and wide-ranging PFAS restriction, with very limited derogations. Finally, comment IDs #7999 and #8933 were submitted by another stakeholder supporting the proposed PFAS restriction and an industry association/knowledge centre suggesting a permanent derogation for the use of certain fluorinated greenhouse gases as working fluids in waste heat recovery applications.
No, as the stakeholder is an industrial stakeholder benefitting from the positive, e.g. environmental, impacts of a restriction	5	The comments are considered not relevant for determining applications for which production is prevalent in the Netherlands as the submitters are industrial stakeholders that primarily benefit from the environmental and public-health impacts of the PFAS restriction rather than needing support to substitute PFAS in their own products. Comment IDs #6576, #7094, #8385 and #9336 were submitted by associations of water companies and other actors involved in drinking water, surface water and groundwater treatment, highlighting the benefits of upstream PFAS restrictions for water quality and treatment costs. Comment ID #8794 was submitted by a trade association in the recycling sector, arguing in favour of a total ban on PFAS and noting that recyclers have limited scope to influence PFAS phase-out, as they mainly deal with end-of-life materials.

Does this comment cover an application or applications, for which production is prevalent in the Netherlands, that benefit from a derogation of a duration of 13.5 years, or time-unlimited derogations associated with those?	Number of comments for which this conclusion has been drawn	Details
		While these stakeholders are positively impacted by the restriction, they do not themselves manufacture or use PFAS in derogated applications and therefore do not represent potential beneficiaries of subsidies for developing alternatives to PFAS.
No, as the submitter is an industry association	6	The comments are considered not relevant as the submitters are industry associations rather than individual companies producing PFAS-based mixtures or articles. These associations represent sectoral interests in or relating to: • The hydrogen industry (comment ID #8210); • Marine transport and the repair and maintenance of marine engines and equipment where fluoropolymers are used (comment ID #8713); • Pump manufacturers and suppliers (comment ID #8733); • The chemical process industry including PFAS producers and downstream users of fluoropolymers (comment ID #9044); • Manufacturers of engines used in the marine environment such as recreational marine engines and personal watercraft (comment ID #9349); and • The paper and board value chain, including packaging, paper recycling, tissue, fibres and food-contact materials (comment ID #9523). While these associations provide useful sector-level perspectives and positions on the PFAS restriction, their comments do not describe concrete company-level production activities.
Not clear based on publicly shared information	13	For several comments (e.g. comment IDs #6716, #7757, #7804, #7910, #7917), it is not possible to clearly determine whether the described applications fall within the scope of a 13.5-year derogation or any time-unlimited derogation associated with these. The reason is that the publicly available information does not sufficiently describe the application for linking it to a specific derogation with sufficient confidence. In some cases, the described applications are, for example, very broad or diverse (e.g. coatings across multiple industries in the comment with ID #7910, or unspecified membrane applications in the comment with ID #6716), making it difficult to link them to proposed derogations.

Does this comment cover an application or applications, for which production is prevalent in the Netherlands, that benefit from a derogation of a duration of 13.5 years, or time-unlimited derogations associated with those?	Number of comments for which this conclusion has been drawn	Details
Irrelevant as this comment is (largely) a duplicate	3	The comments are considered irrelevant for the assessment, as they largely duplicate information already submitted by the same stakeholder in other comments and do not provide additional substantive input.
Irrelevant as this comment is the second submission of a stakeholder falling in an irrelevant stakeholder type category	1	The comment is considered irrelevant for the assessment, as it constitutes a second submission from a stakeholder belonging to a stakeholder type that is already classified as irrelevant. It does not add substantive new information beyond the stakeholder's initial comment.

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